

45

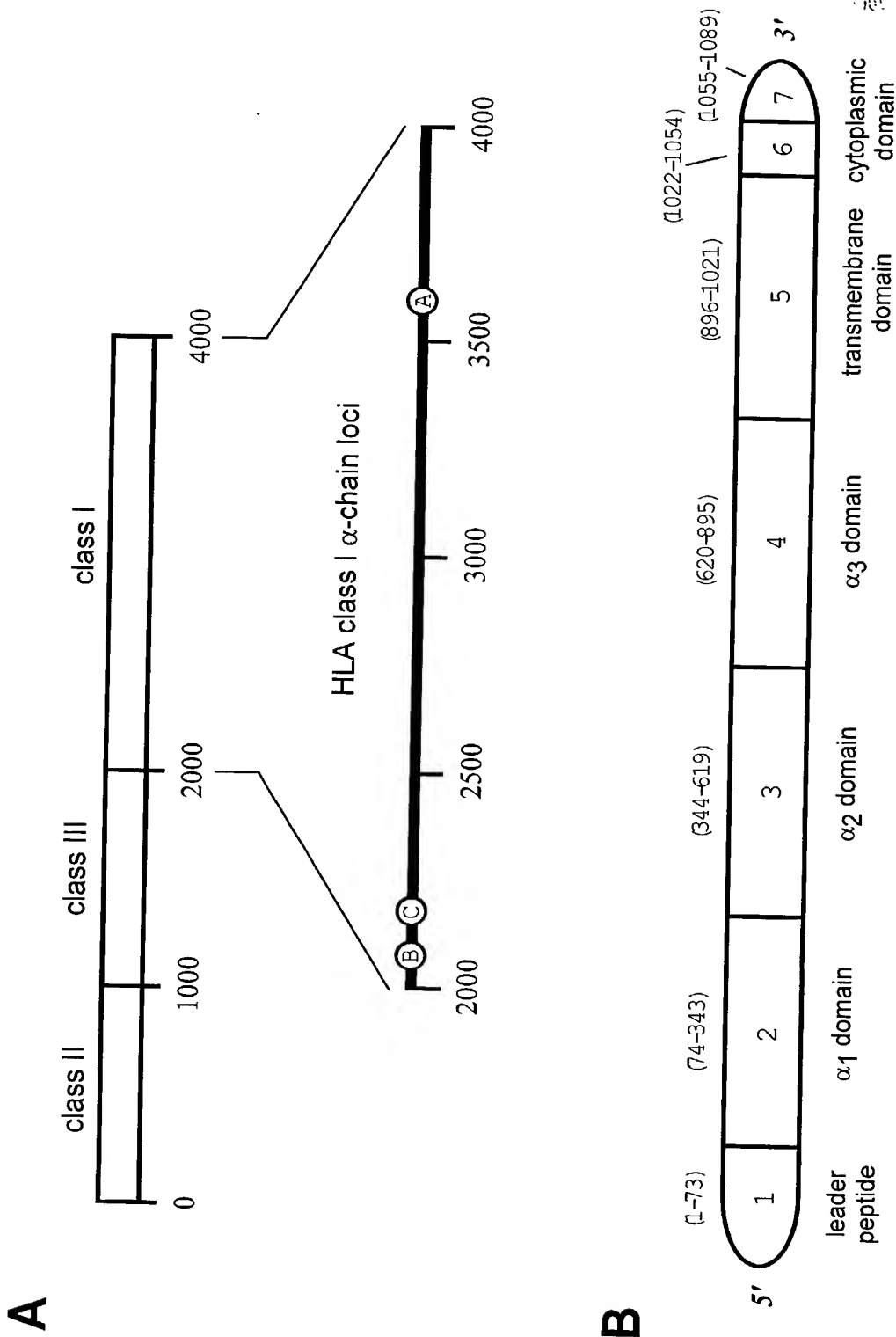


Fig. 1

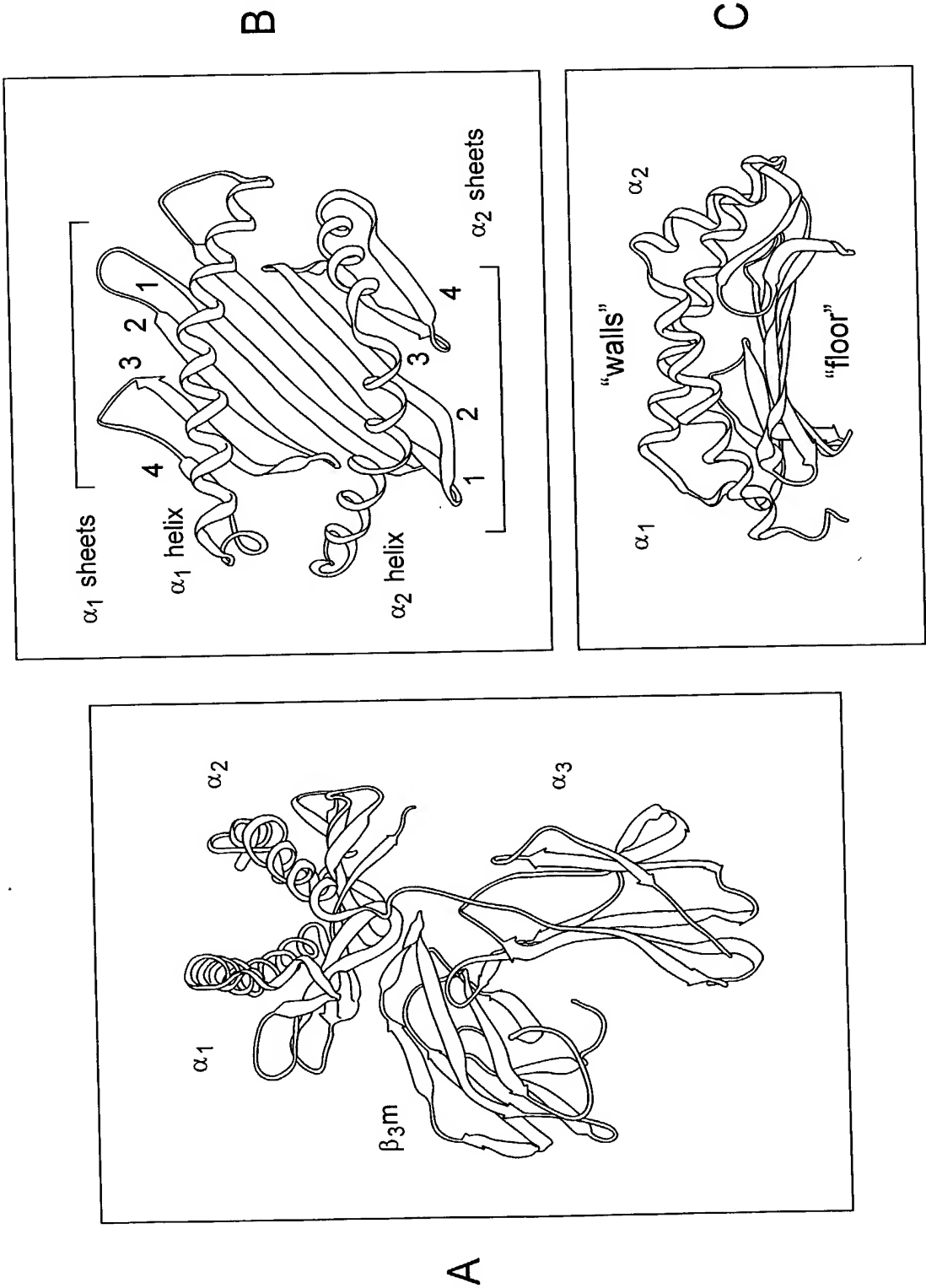


Fig. 2

Serial No. 10/022,066
Title: METHOD AND APPARATUS FOR THE PRODUCTION OF
SOLUBLE MHC ANTIGENS AND USES THEREOF
Applicant: William Hildebrand, et al. Group No.: 1652
Filed: 12/18/2001 Examiner: Not Yet Assigned
Atty: Douglas J. Sorocco Tel: (405) 478-5344
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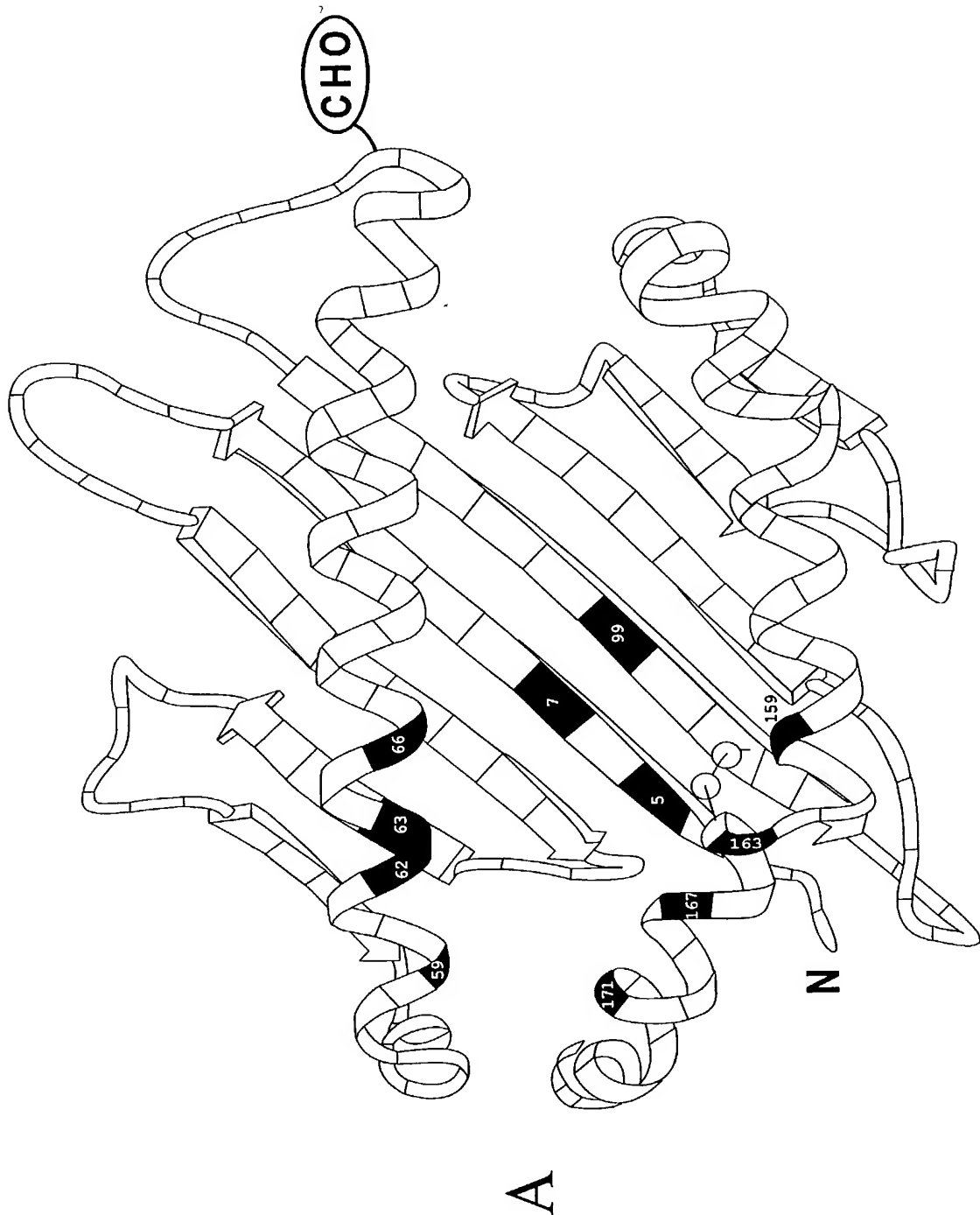


Fig. 3 1 of 6

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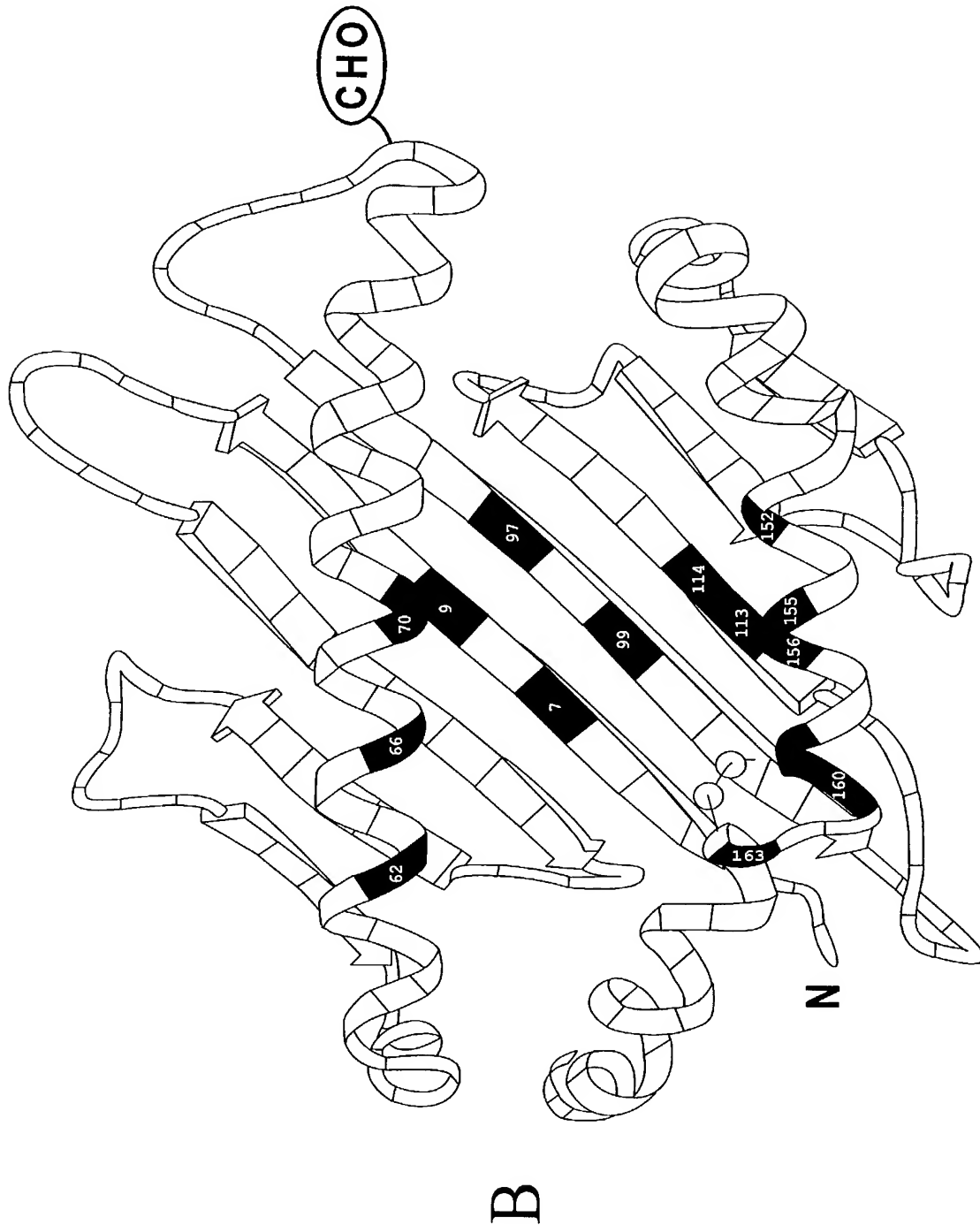


Fig. 3 2 of 6

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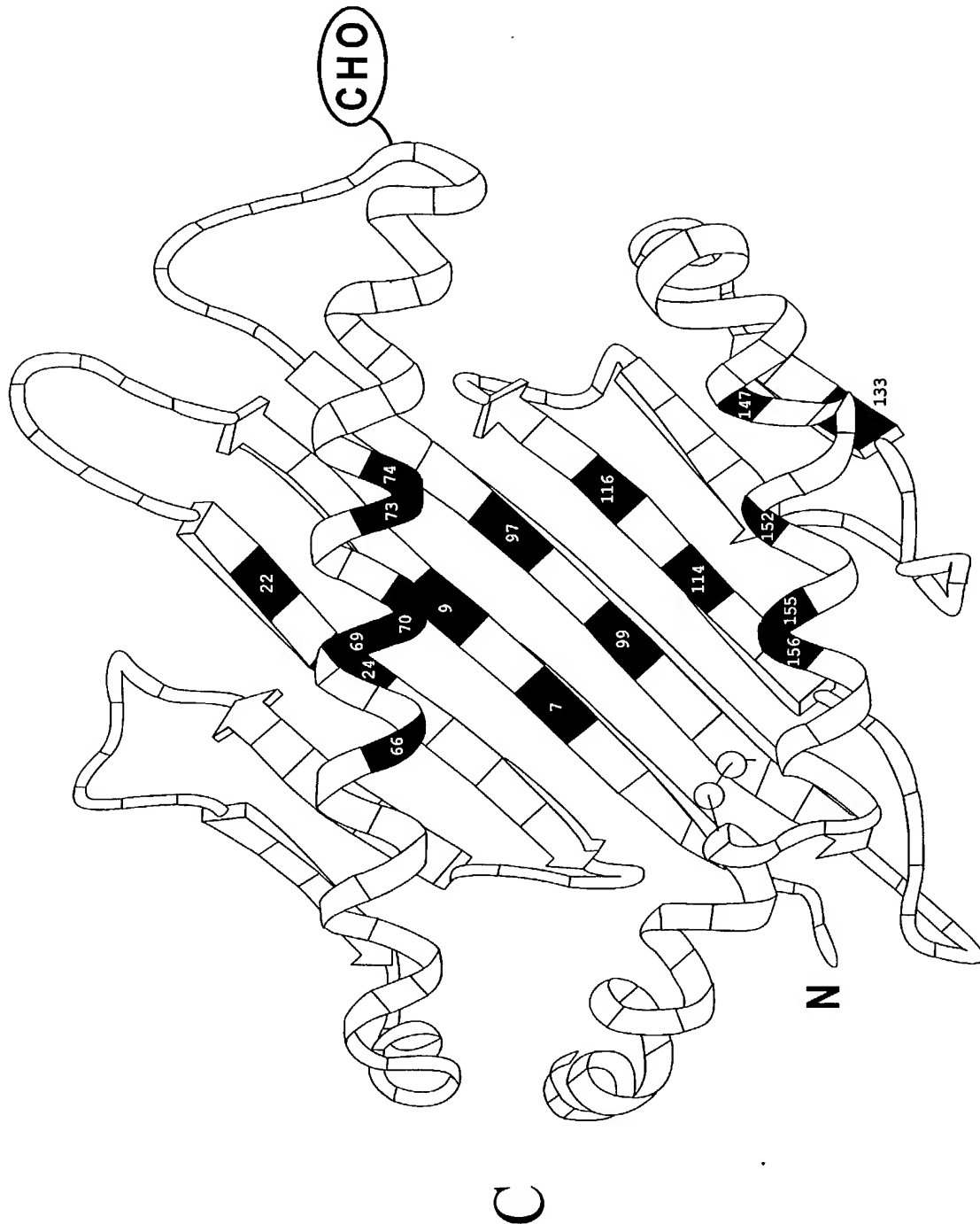


Fig. 3 3 of 6

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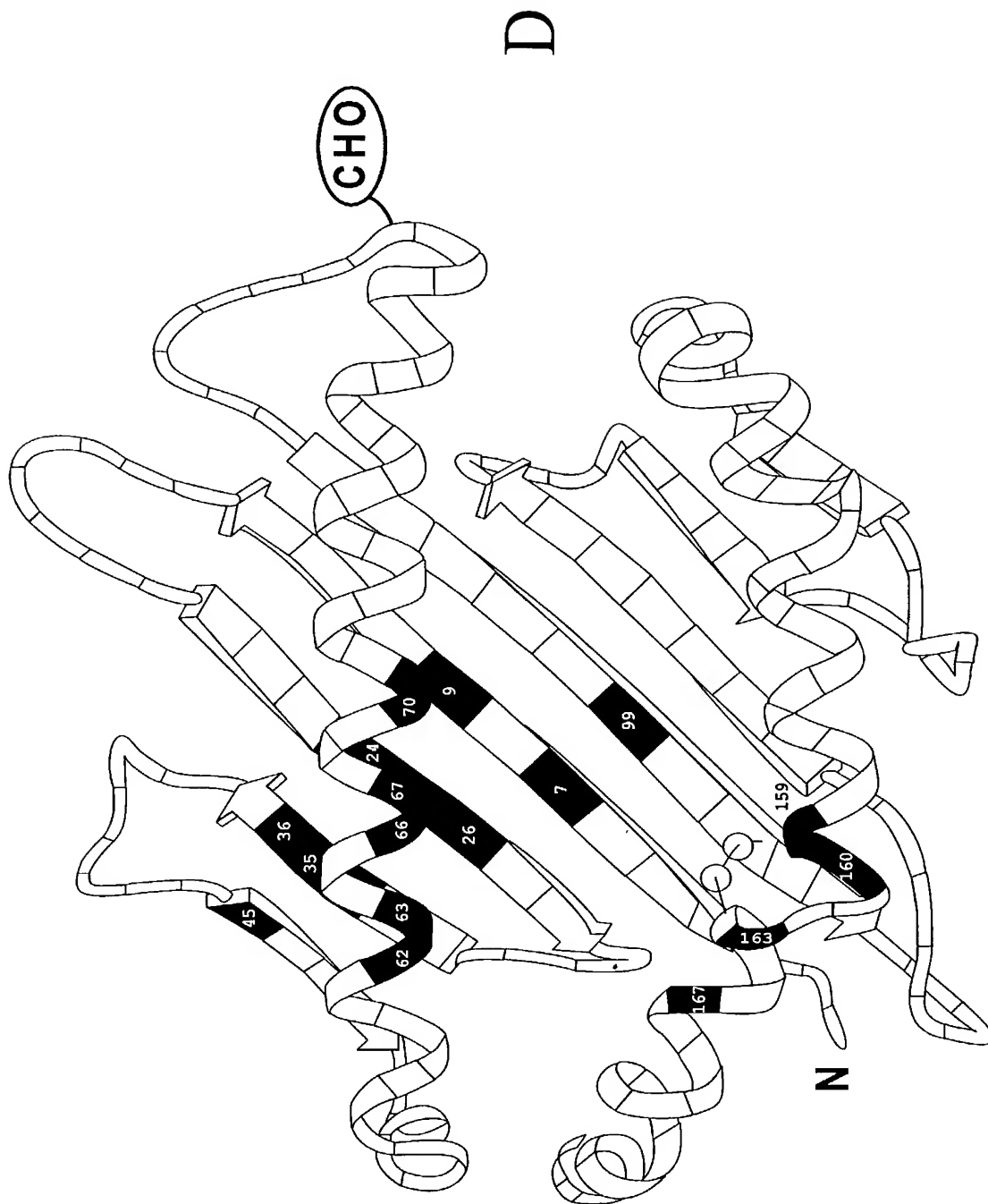


Fig. 3 4 of 6

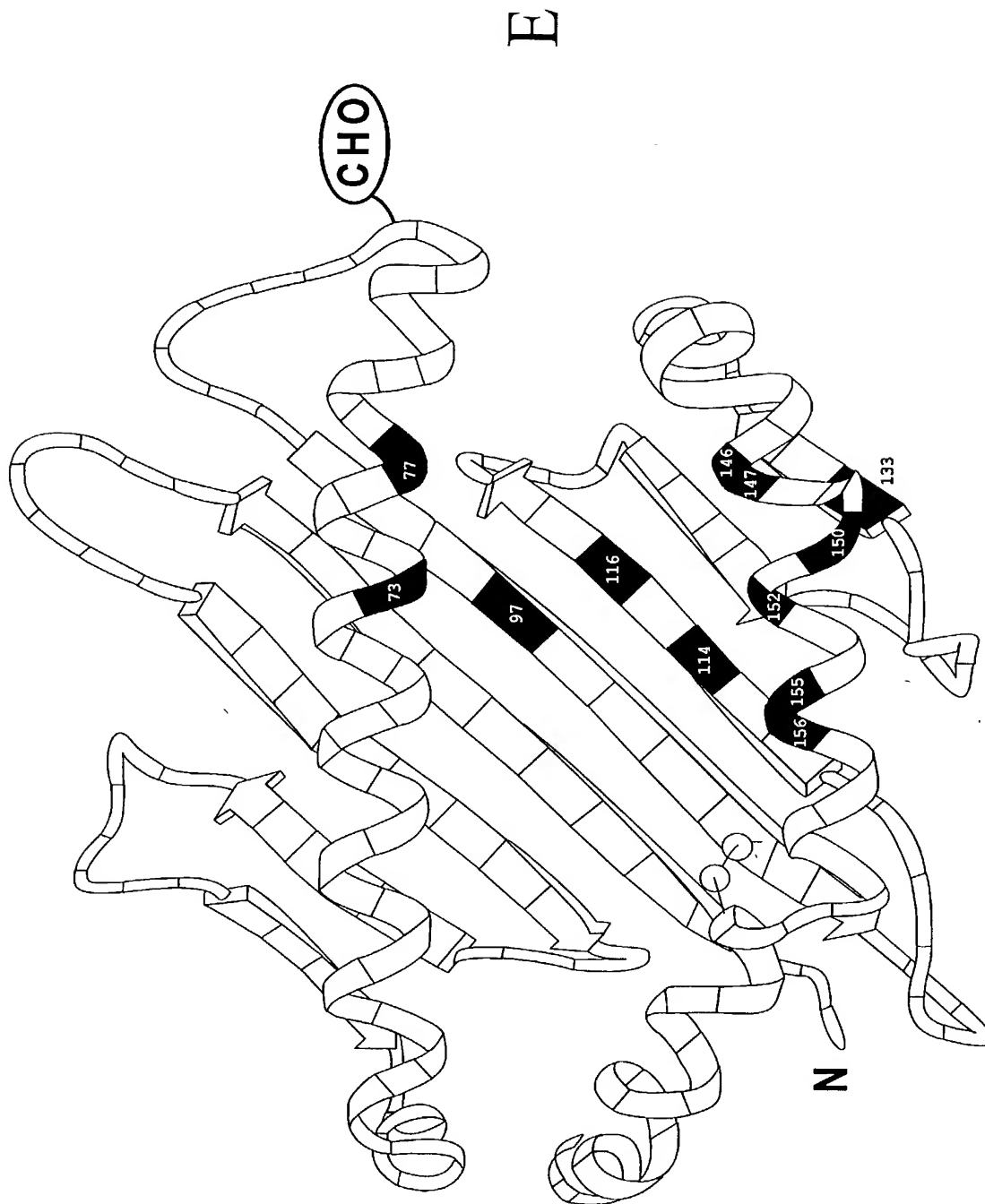


Fig. 3 5 of 6

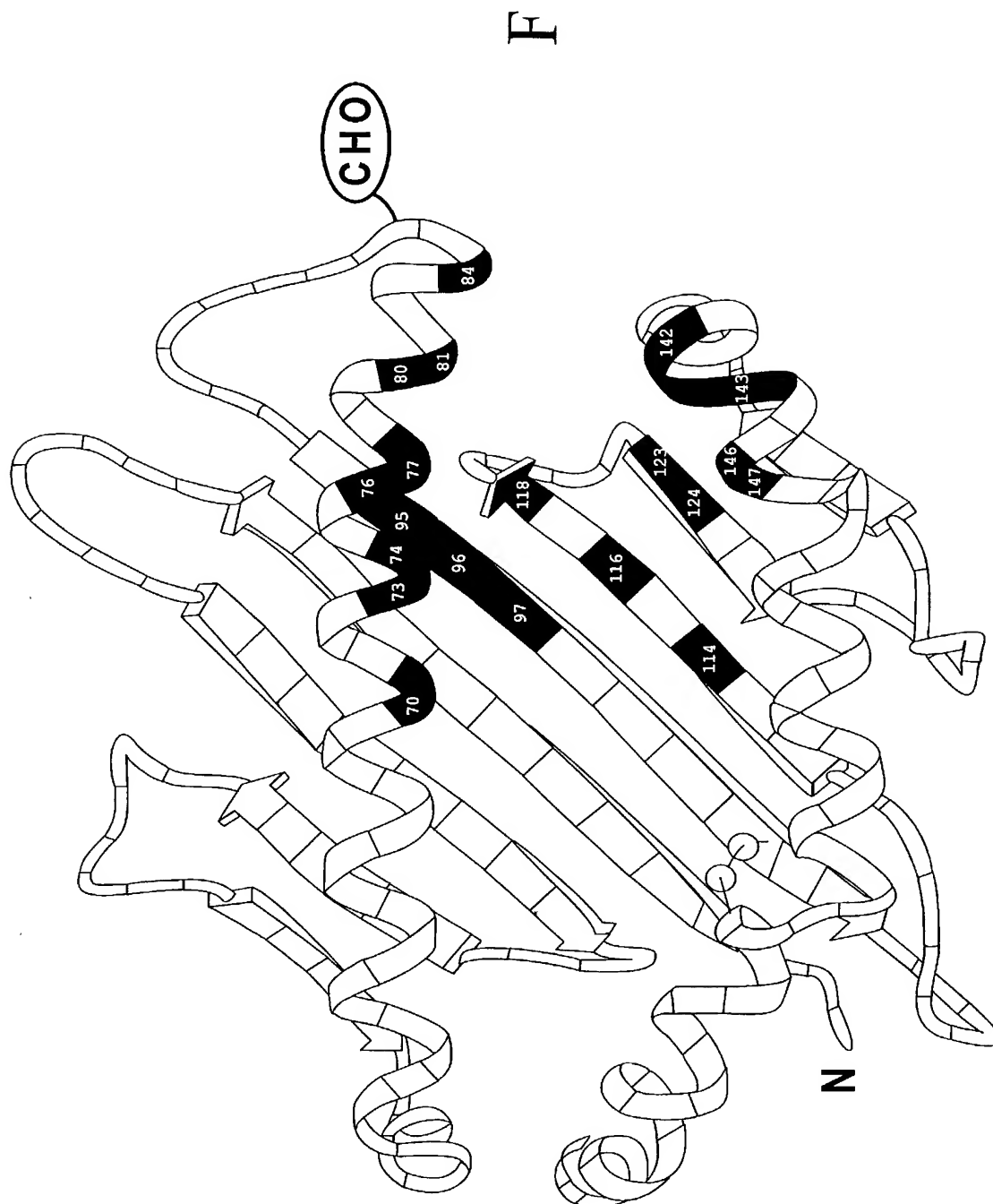


Fig. 3 6 of 6

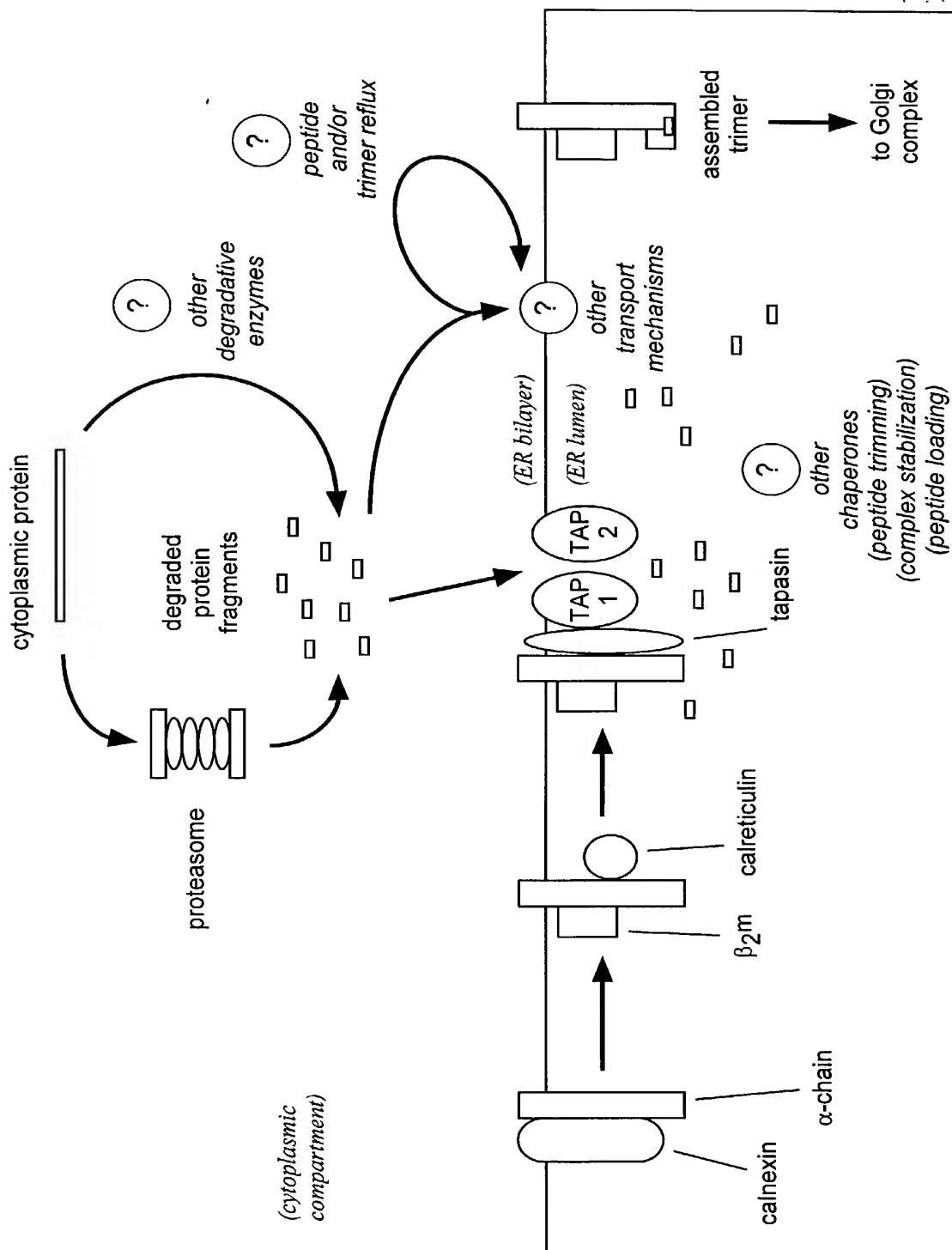


Fig. 4

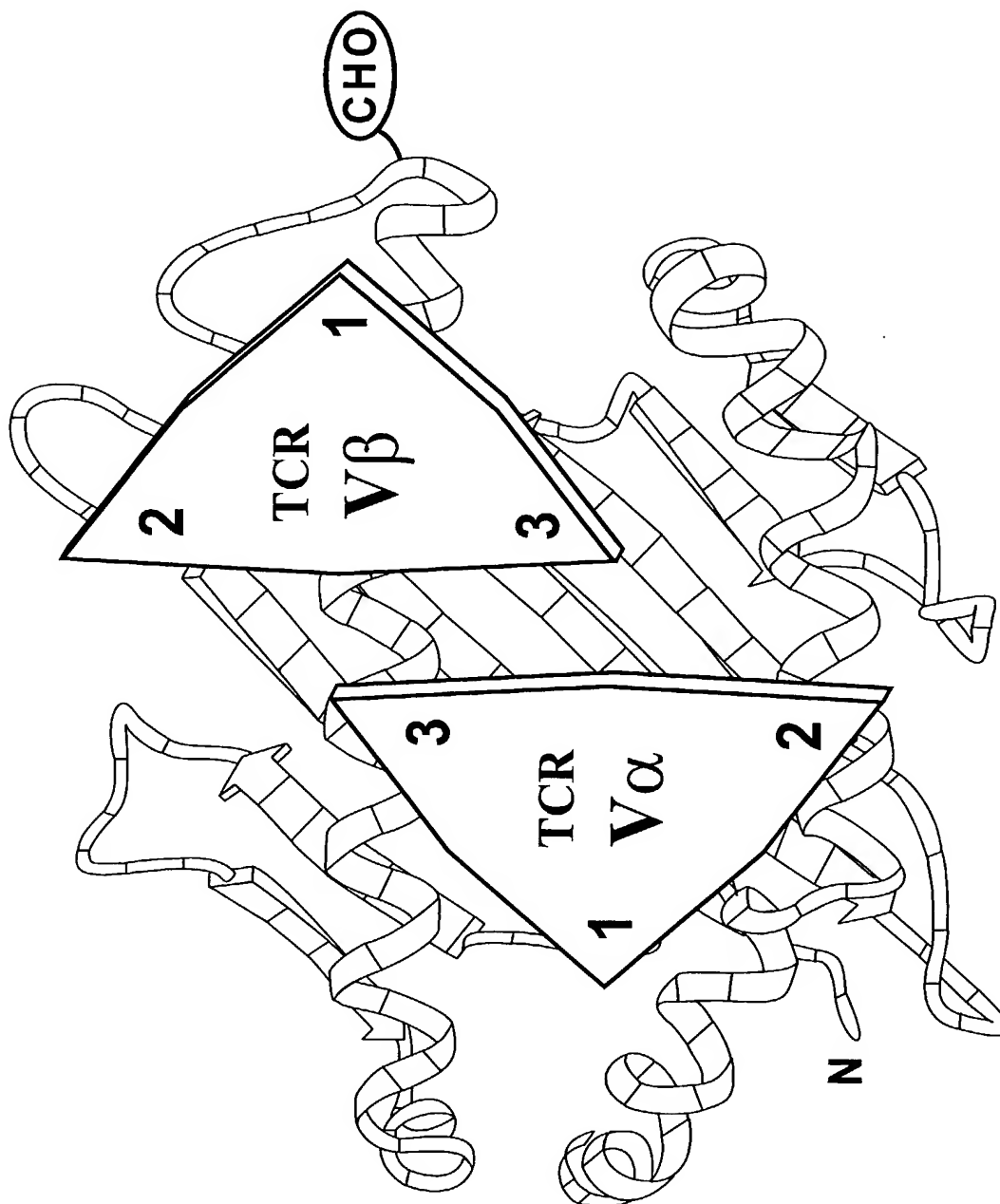


Fig. 5

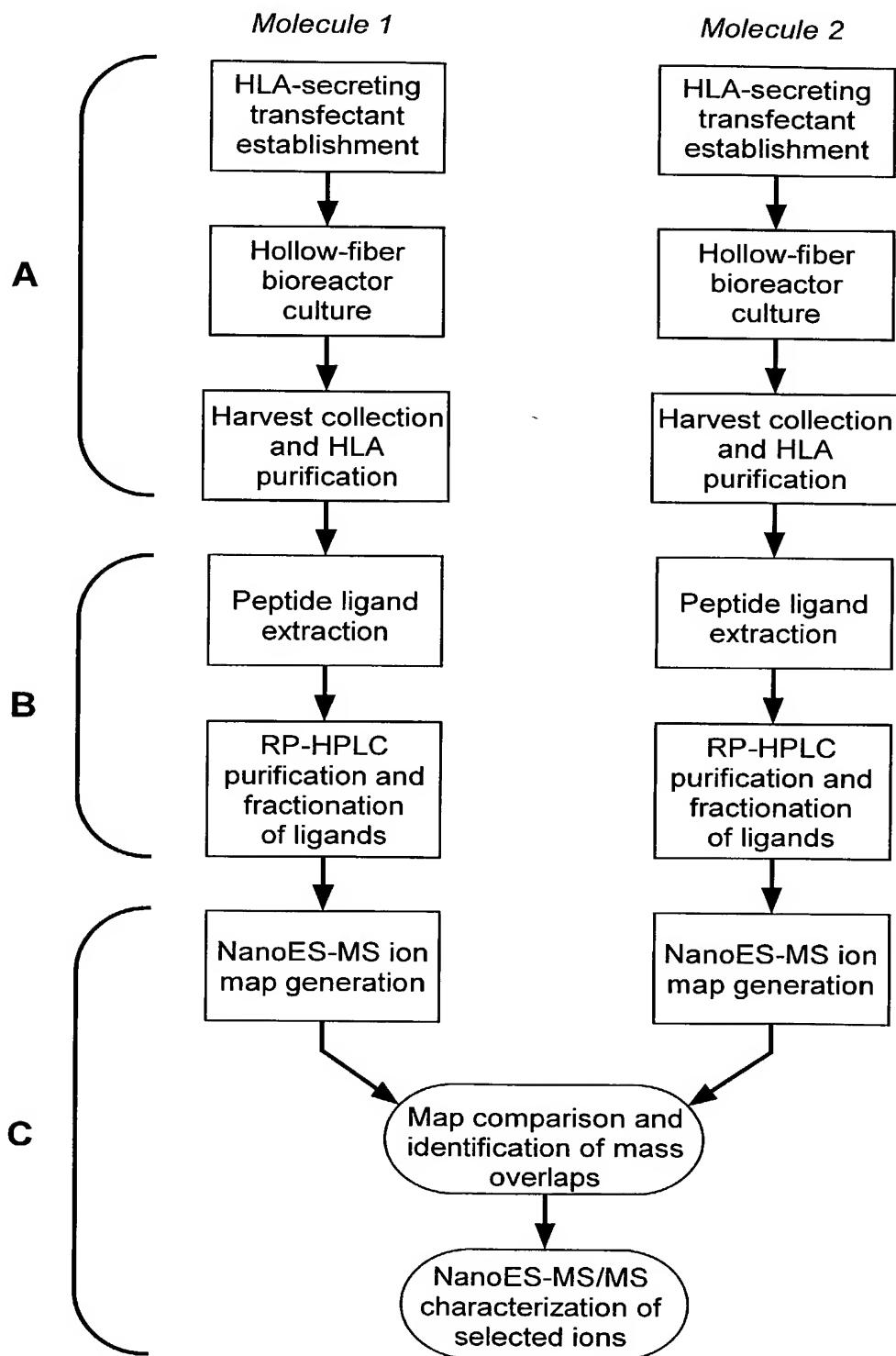


Fig. 6

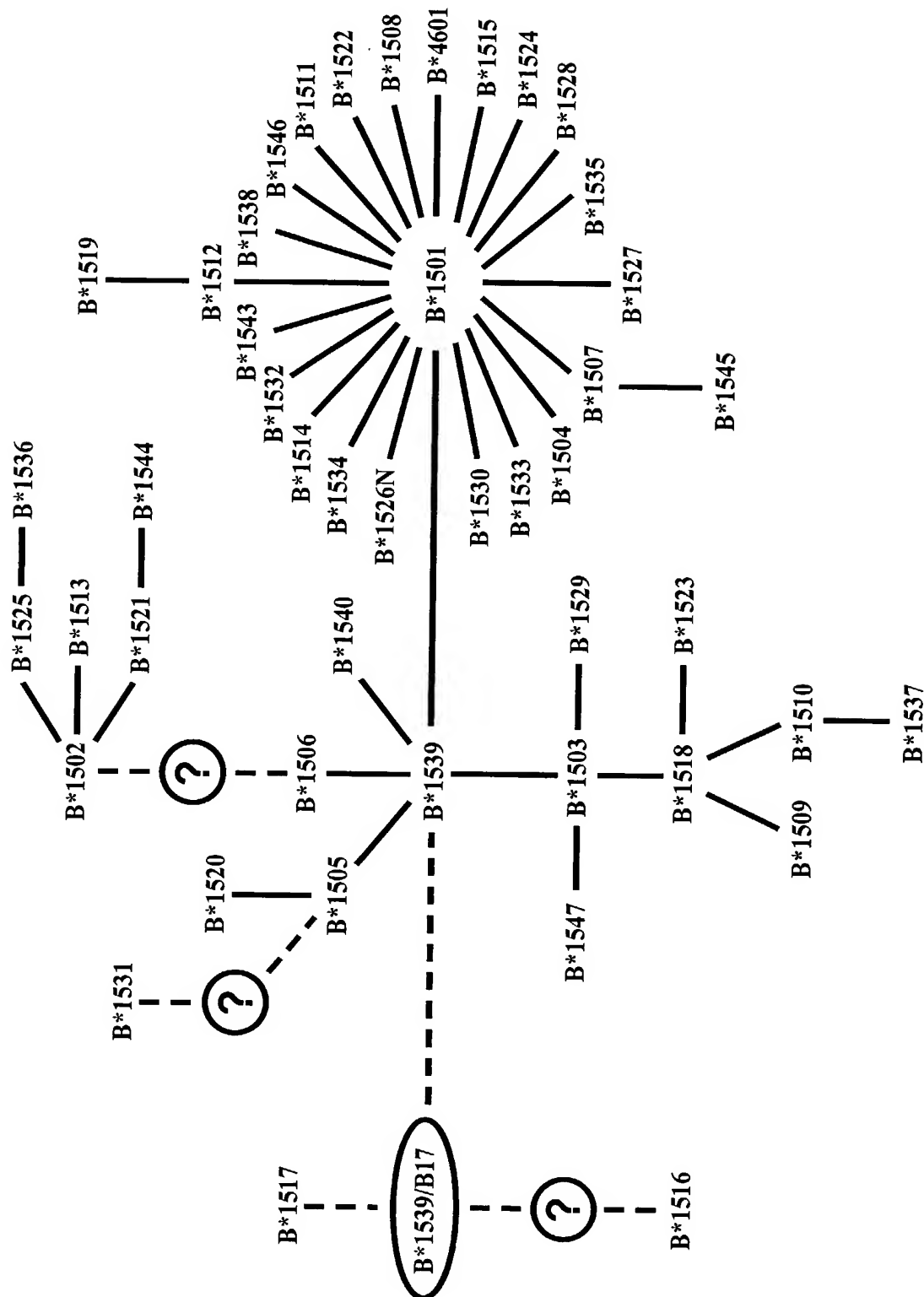


Fig. 7

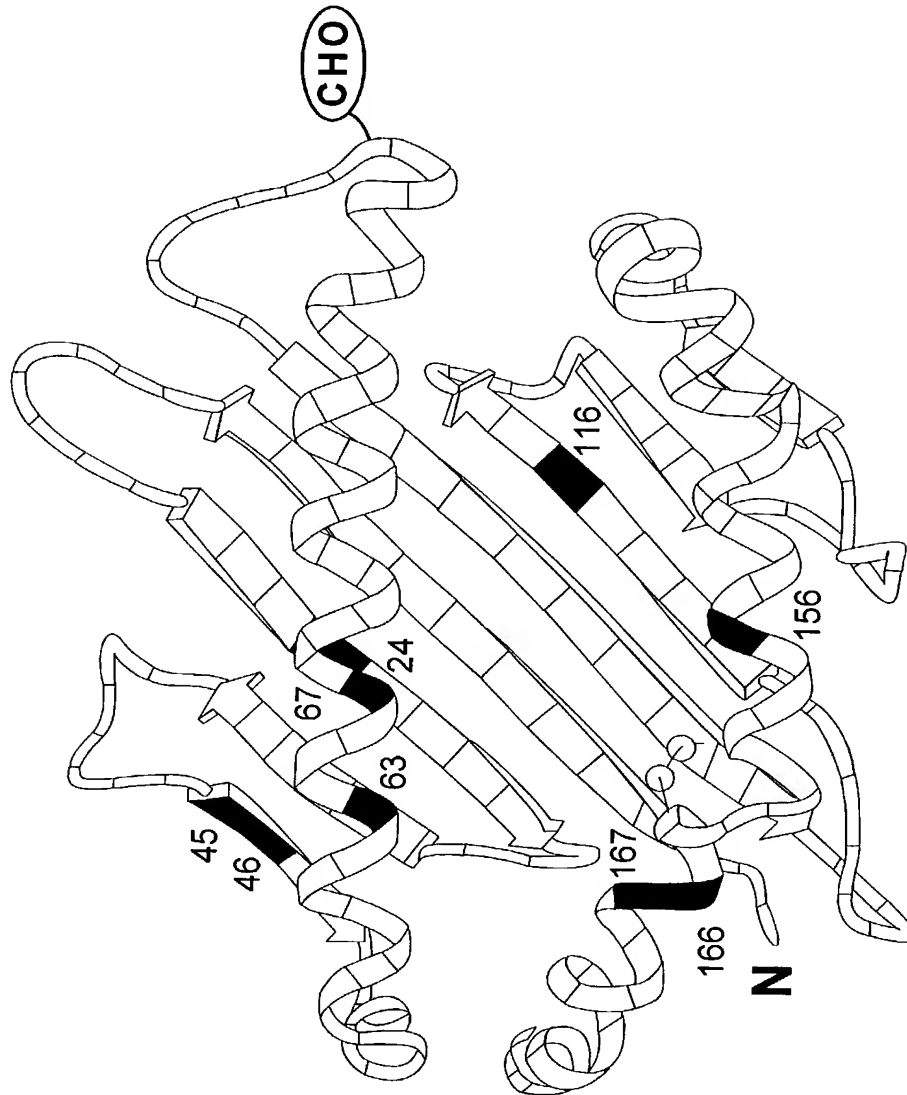


Fig. 8

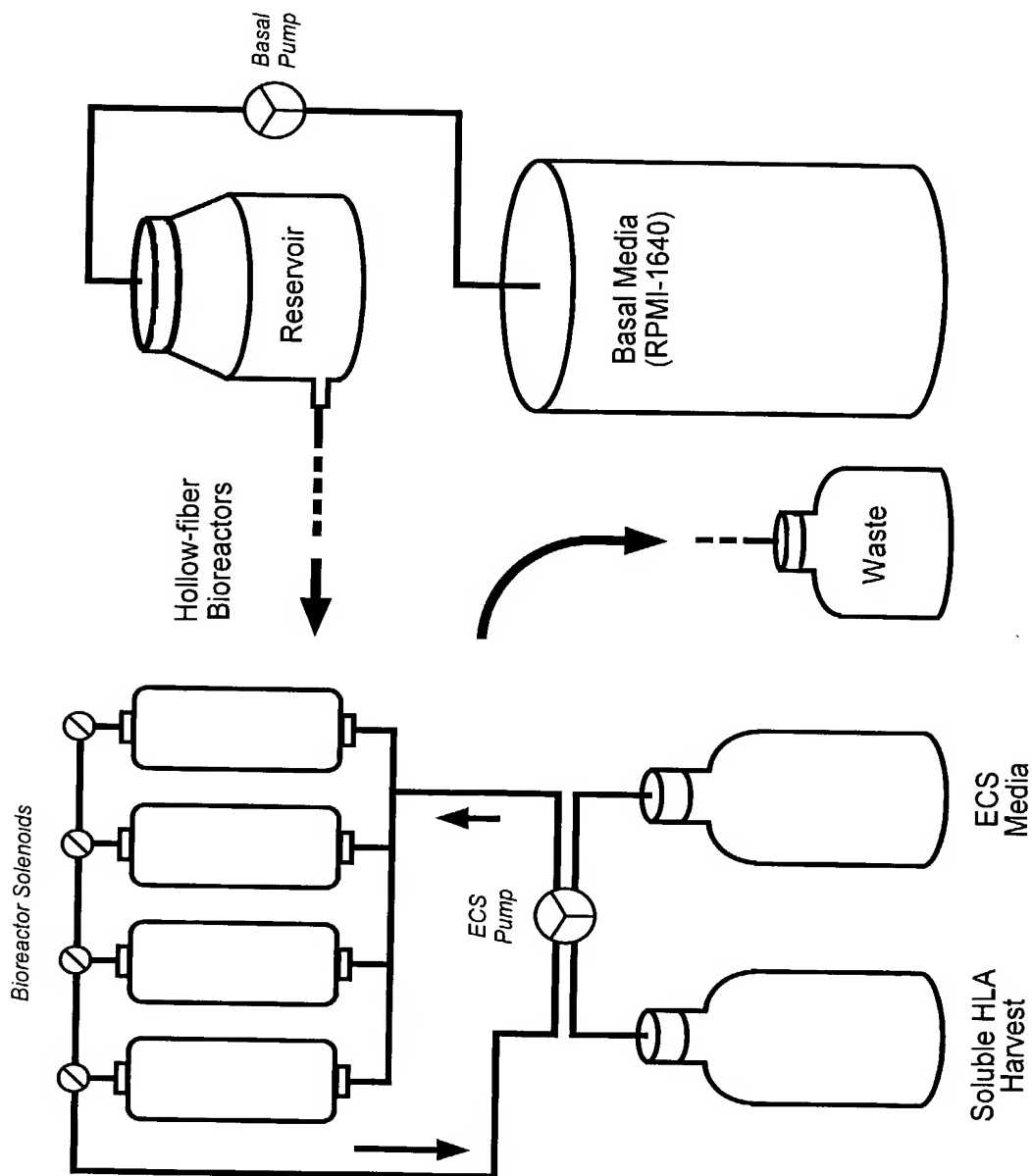


Fig. 9

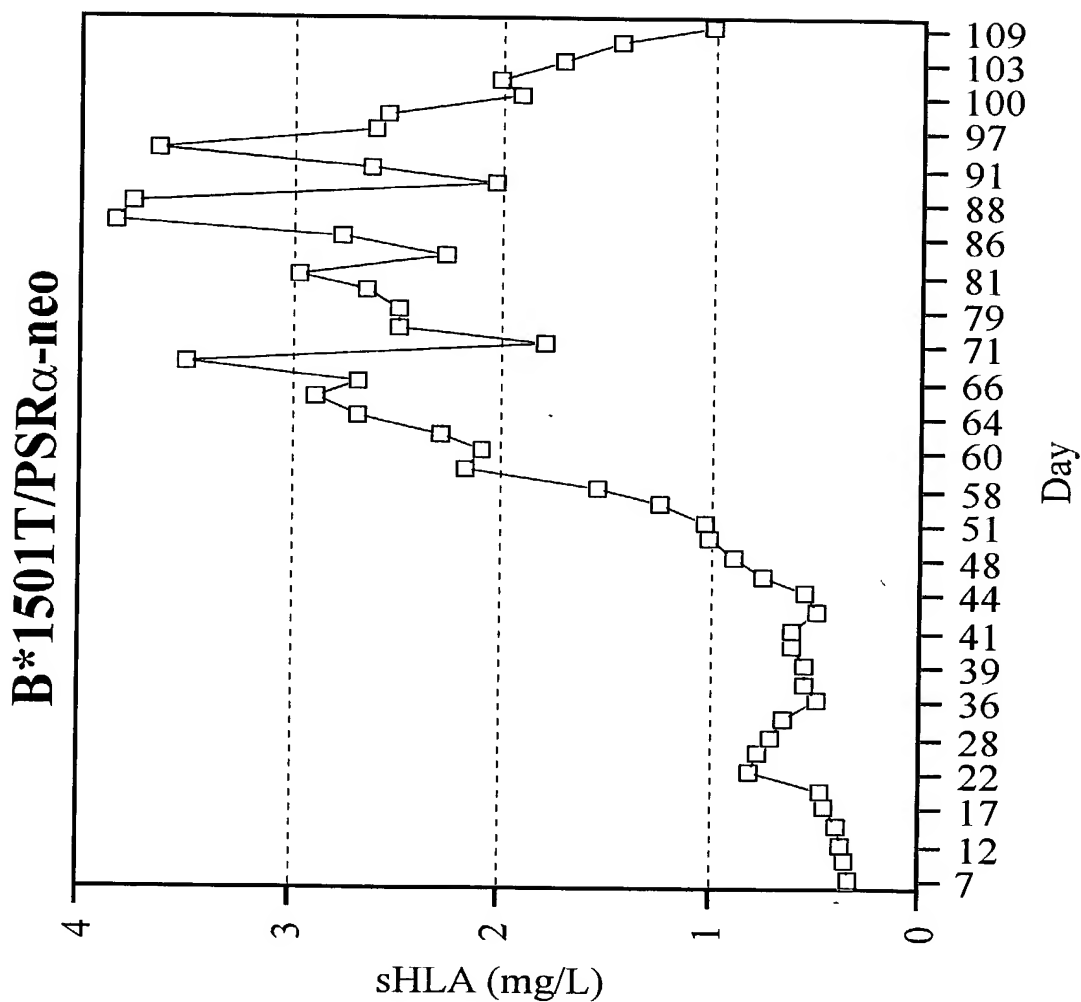


Fig. 10 1 of 2

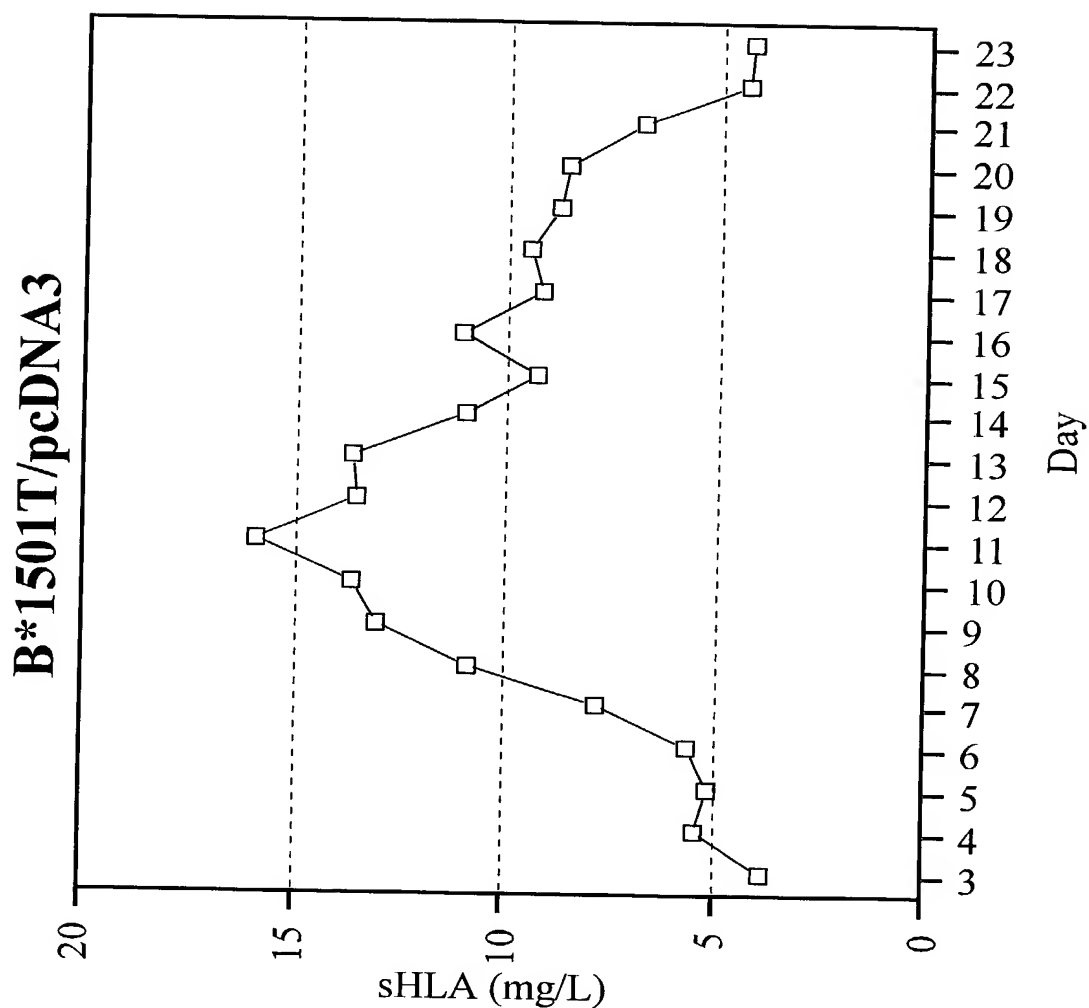


Fig. 10 2 of 2

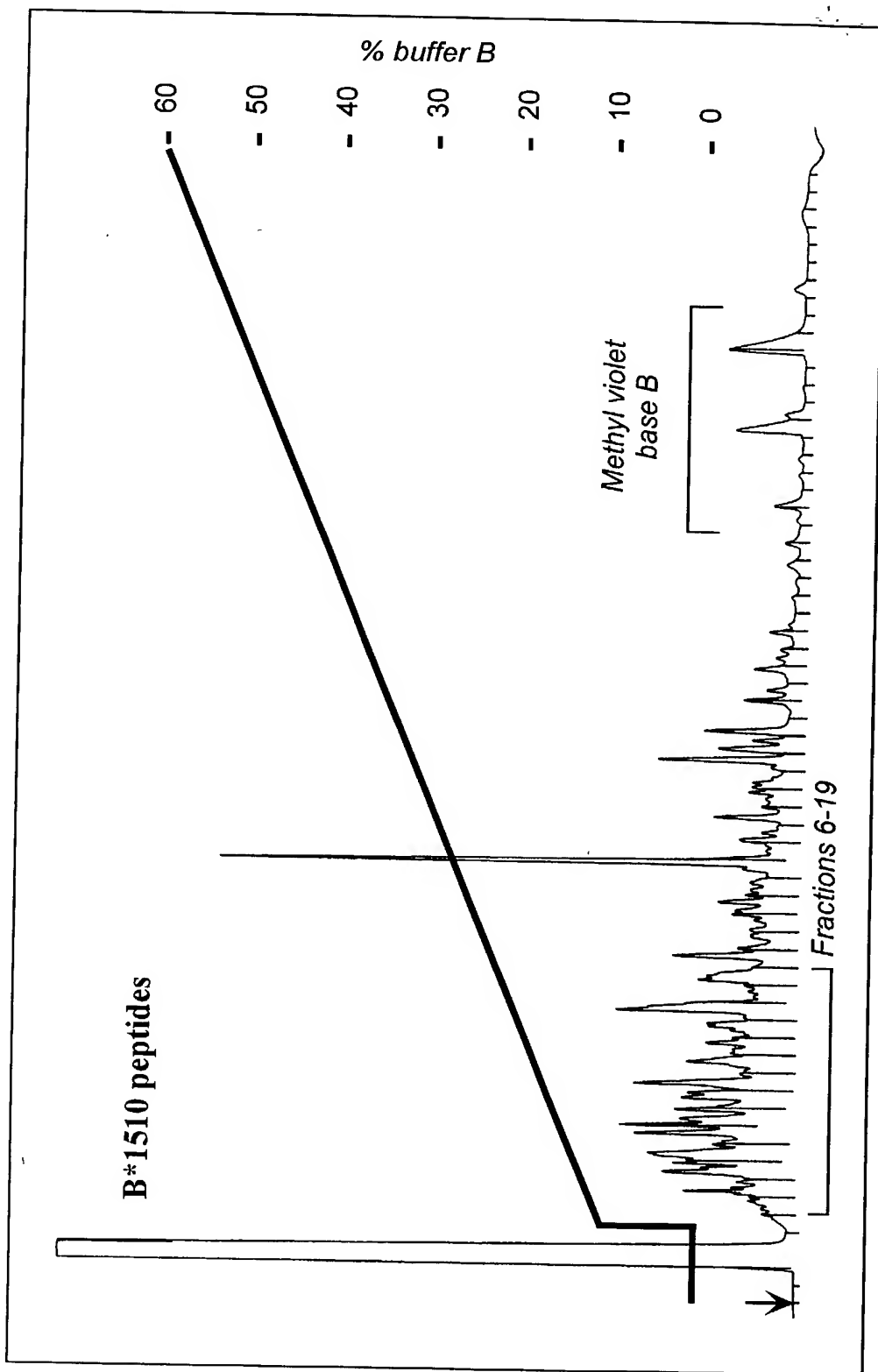


Fig. 11

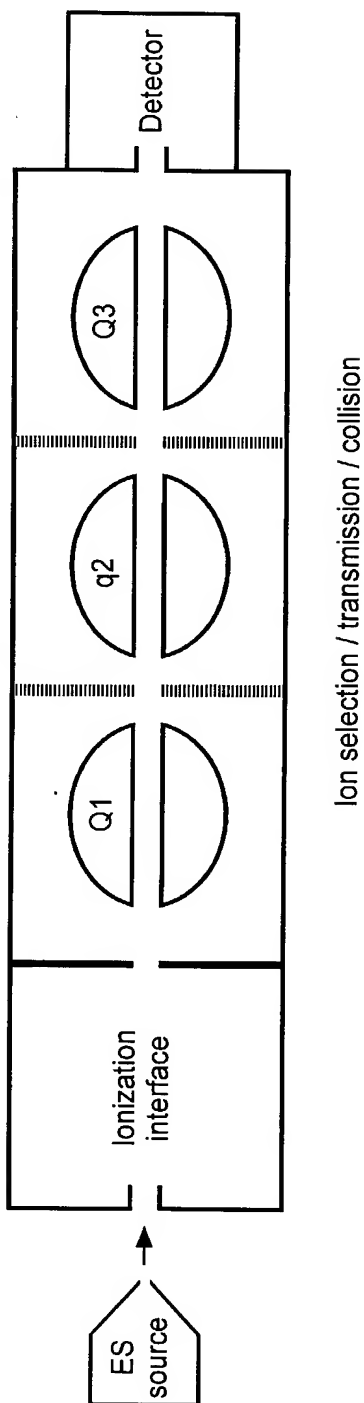
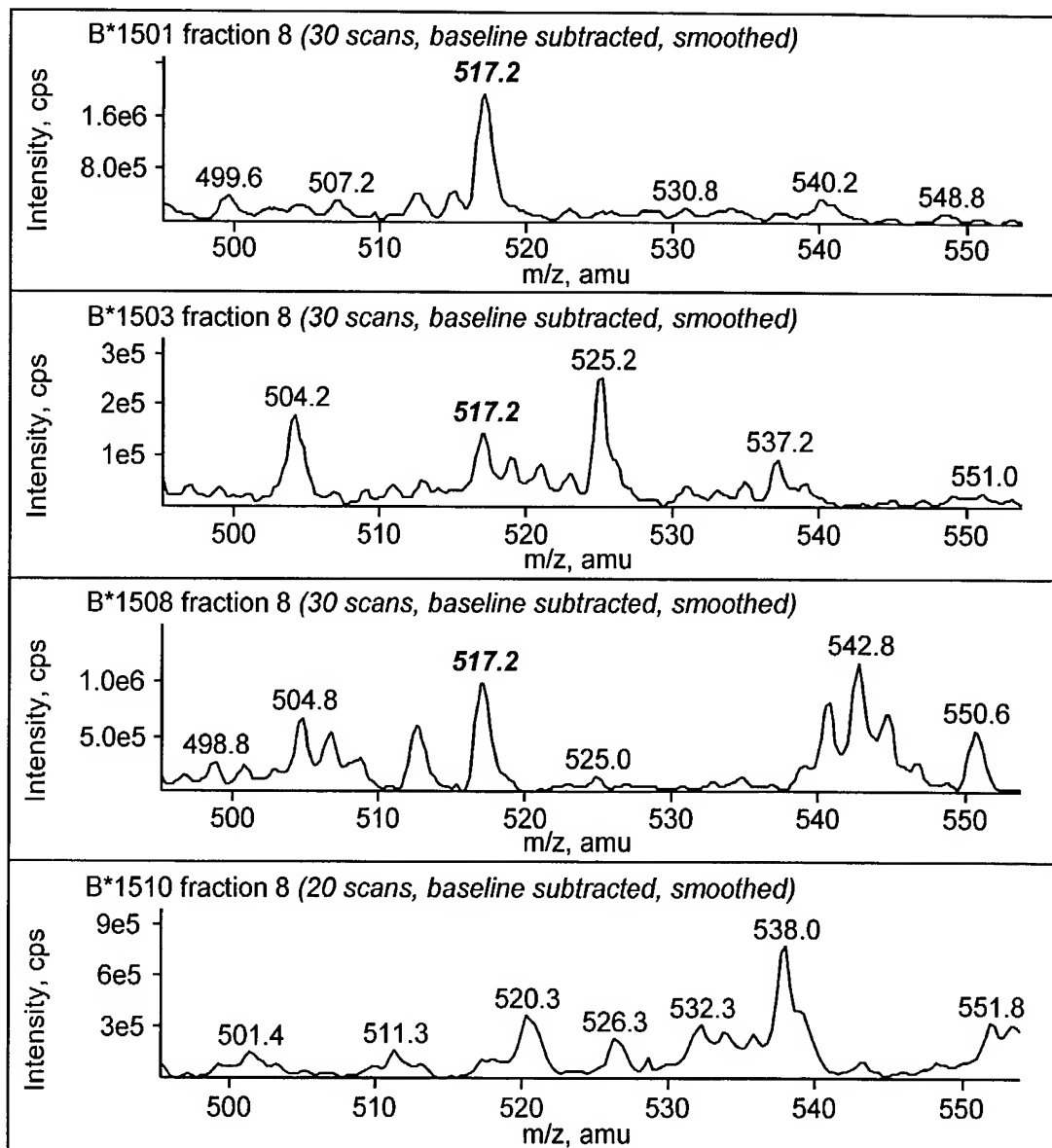
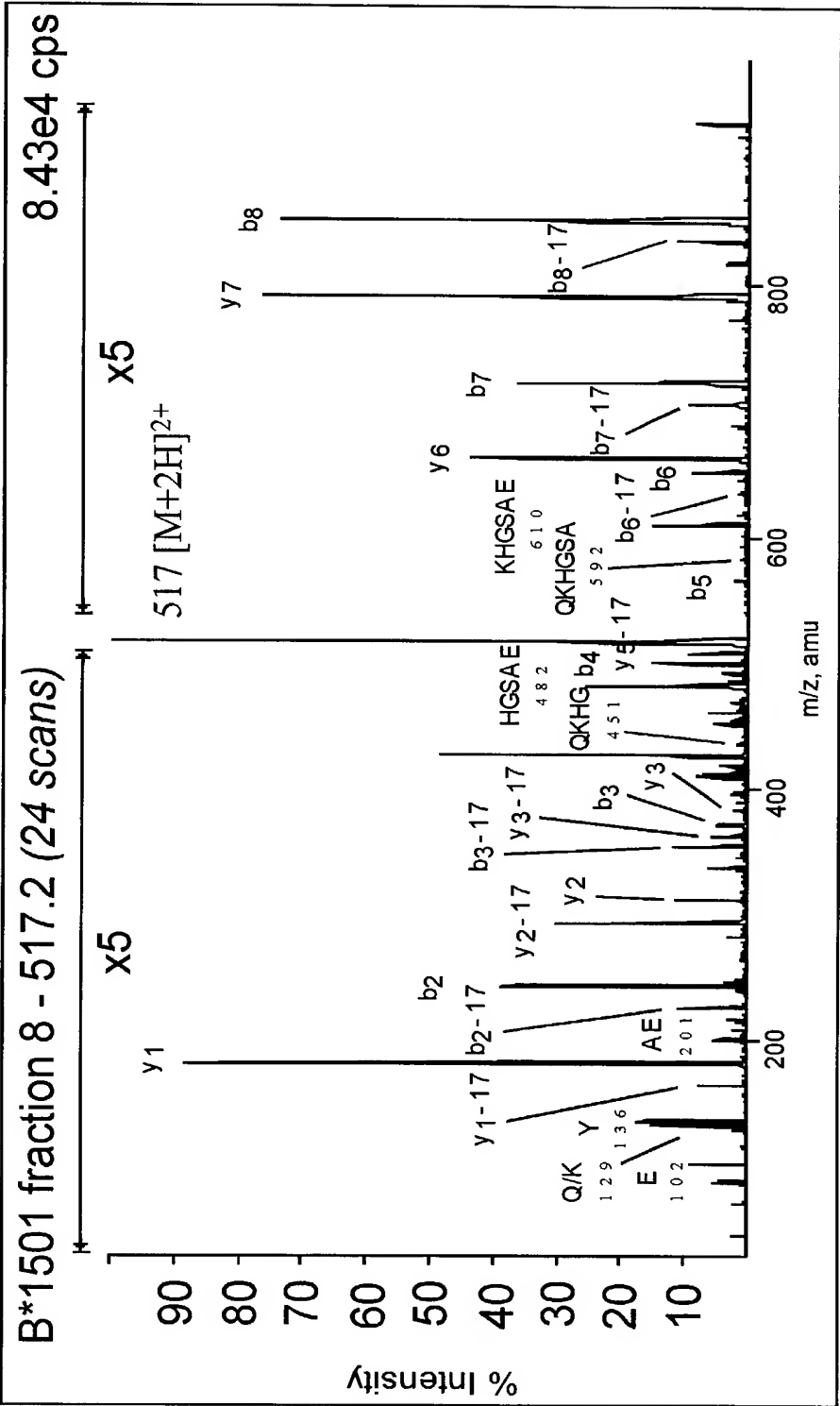


Fig. 12



Graph A



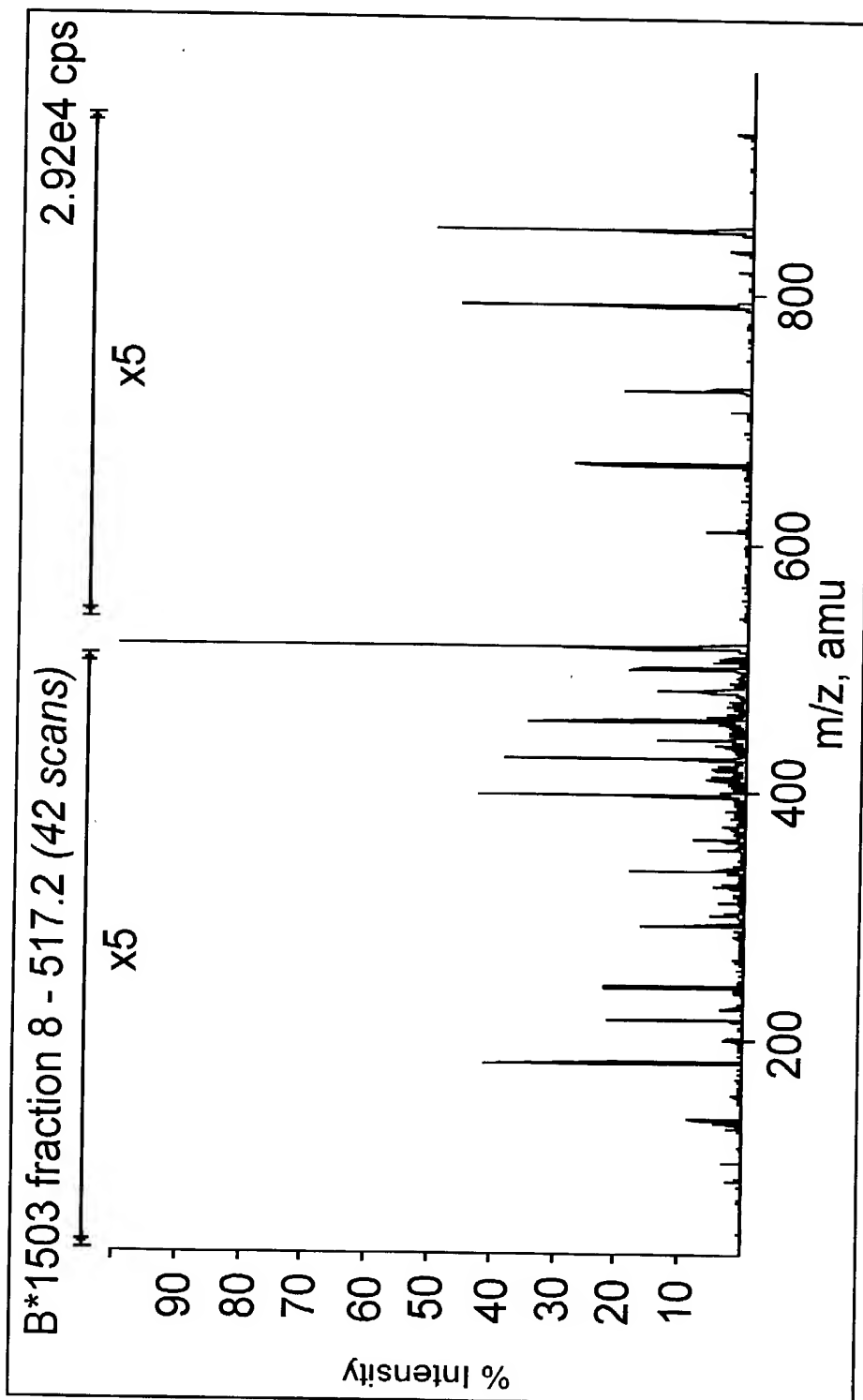
Graph B 1 of 3

Fig. 13 2 of 5

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Atty: Douglas J. Sorocco Tel: (405) 478-5344
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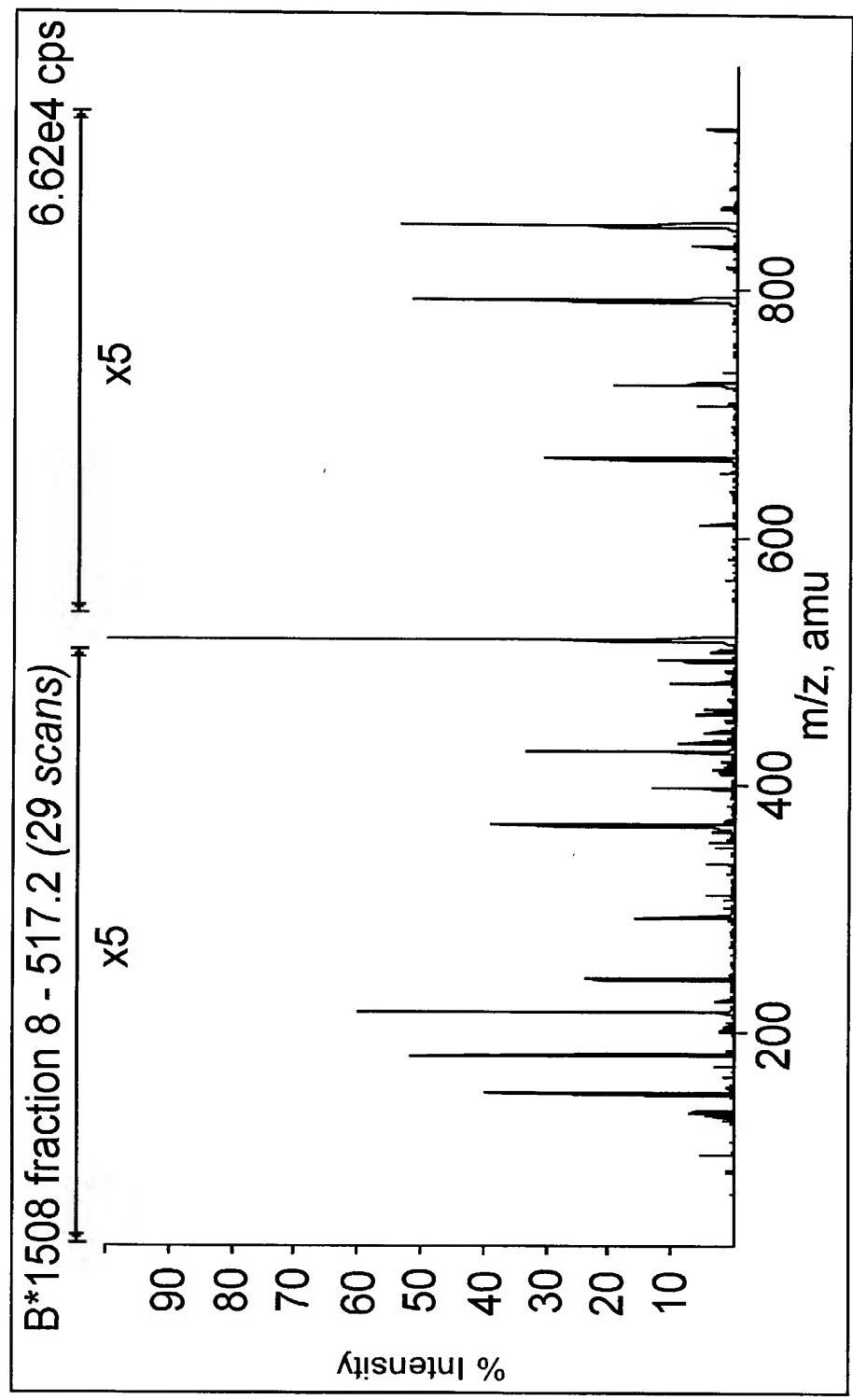
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Graph B 2 of 3

Fig. 13 3 of 5



Graph B 3 of 3

Fig. 13 4 of 5

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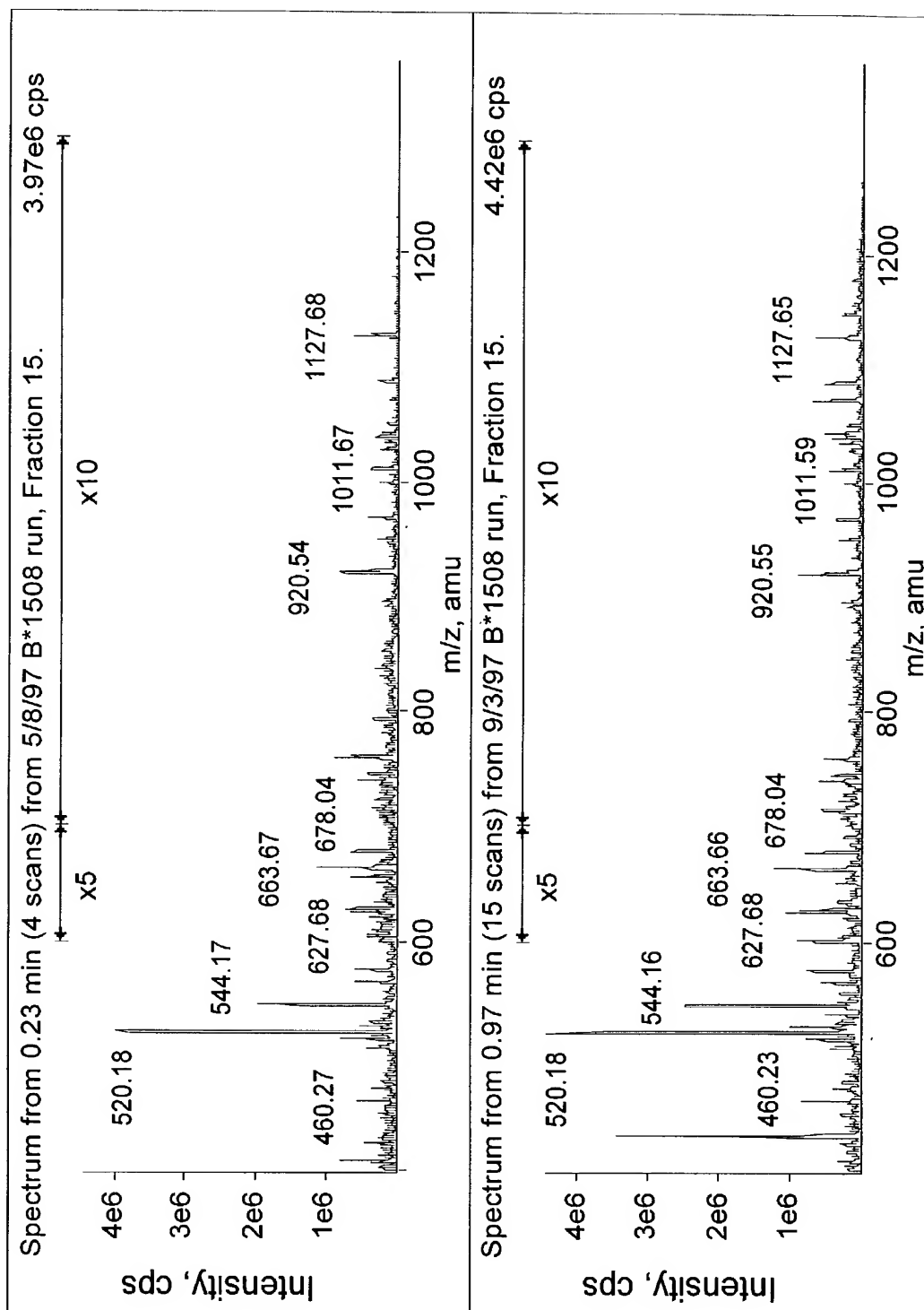
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y-ions:	9	1033	N	115	1
	8	919	Q	243	2
	7	791	Z	371	3
	6	663	H	508	4
	5	526	G	565	5
	4	469	S	652	6
	3	382	A	723	7
	2	311	E	852	8
	1	182	Y	1015	9
b-ions:					

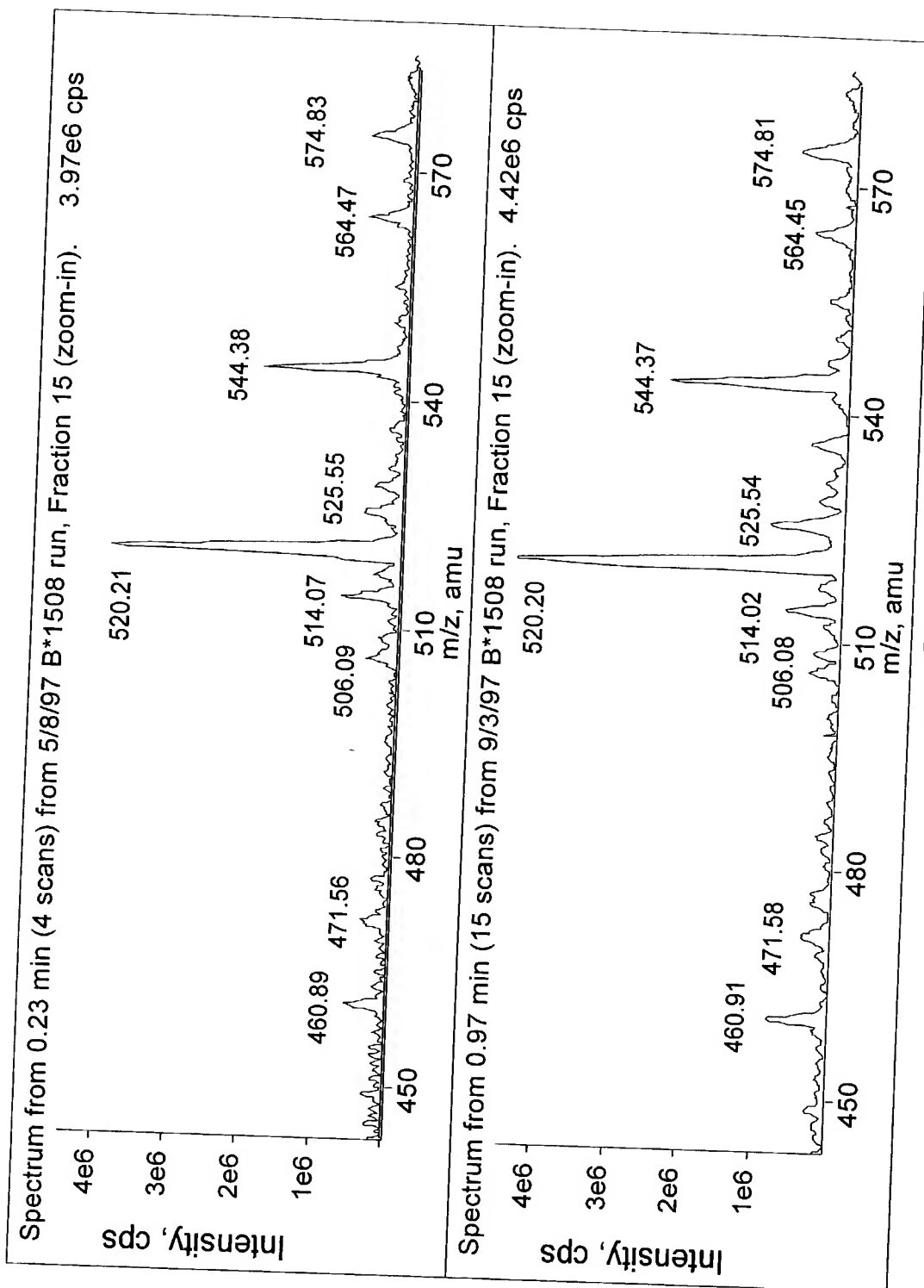
Chart C

Fig. 13 5 of 5



Graph A

Fig. 14 1 of 3



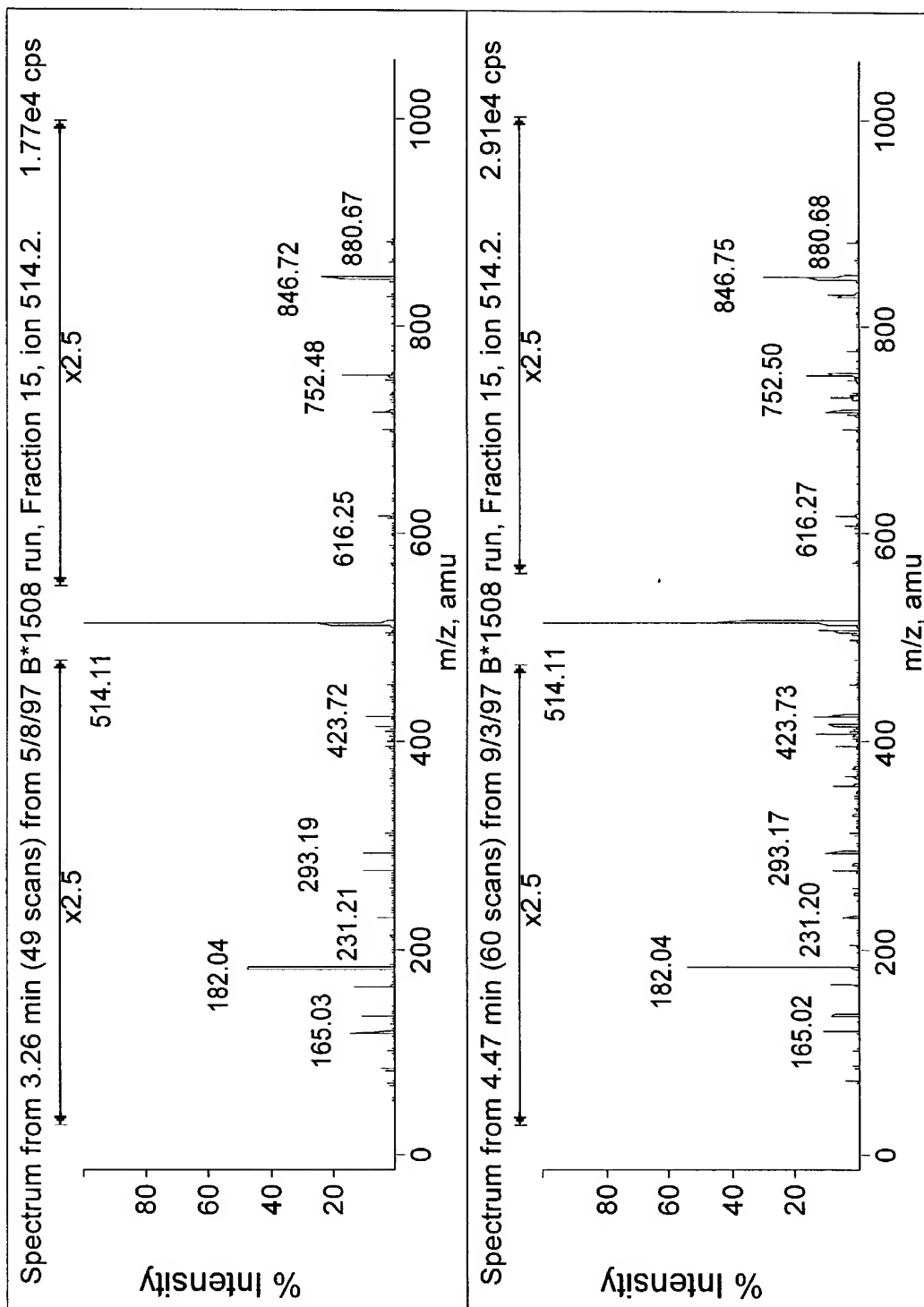
Graph B

Fig. 14 2 of 3

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Graph C

Fig. 14 3 of 3

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A (W6/32-purified B*1501 complexes)

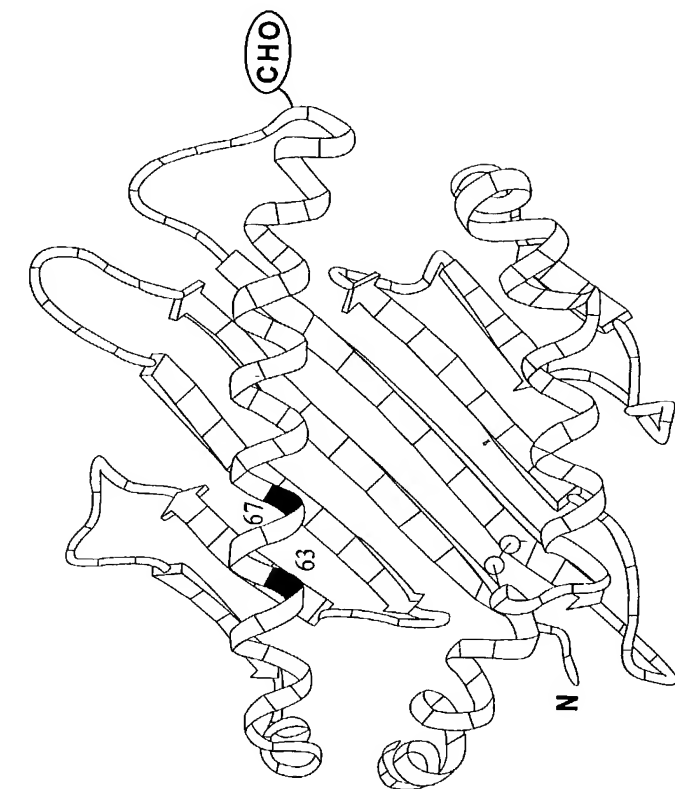
position:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>dominant</i>	-	Q _(8.0)	K _(8.0)	-	-	-	-	-	Y _(4.0)	-	-	-	-	-
			F _(5.0)											
			R _(4.0)											
<i>strong</i>	-	M _(3.0)	Y _(3.0)	P _(2.5)	G _(2.0)	-	-	-	F _(3.0)	-	-	-	-	-
		L _(2.0)	P _(2.0)	D _(2.5)										
		V _(2.0)	N _(2.0)	G _(2.0)										
			H _(2.0)	E _(2.0)										

B (BBM.1-purified B*1501 complexes)

position:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>dominant</i>	-	Q _(7.5)	-	-	-	-	-	-	Y _(4.0)	-	-	-	-	-
<i>strong</i>	-	P _(3.5)	F _(2.5)	P _(2.2)	I _(2.0)	-	-	-	F _(3.0)	-	-	-	-	-
		L _(2.5)	K _(2.5)	D _(2.0)										
		V _(2.0)	R _(2.0)	G _(2.0)										
			P _(2.0)											
			N _(2.0)											

Fig. 15

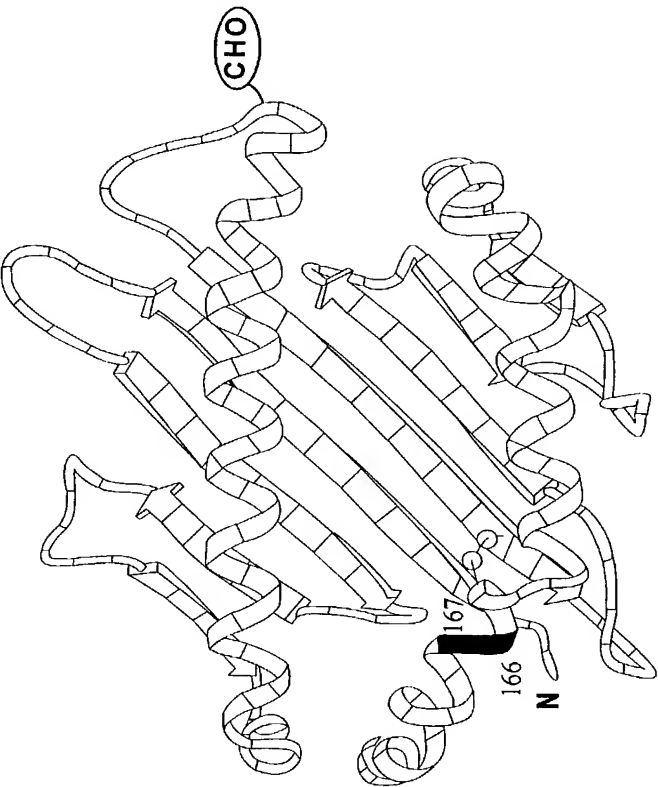
10022066 05524002



B*1508

	1	2	3	4	5	6	7	8	9
dominant	-	P	N	-	-	-	-	-	Y
		A	F						
		K	R						
		H	Y						
		I							
strong	-	-	-	E	H	R	-	-	F
				D					
				G					
				S					

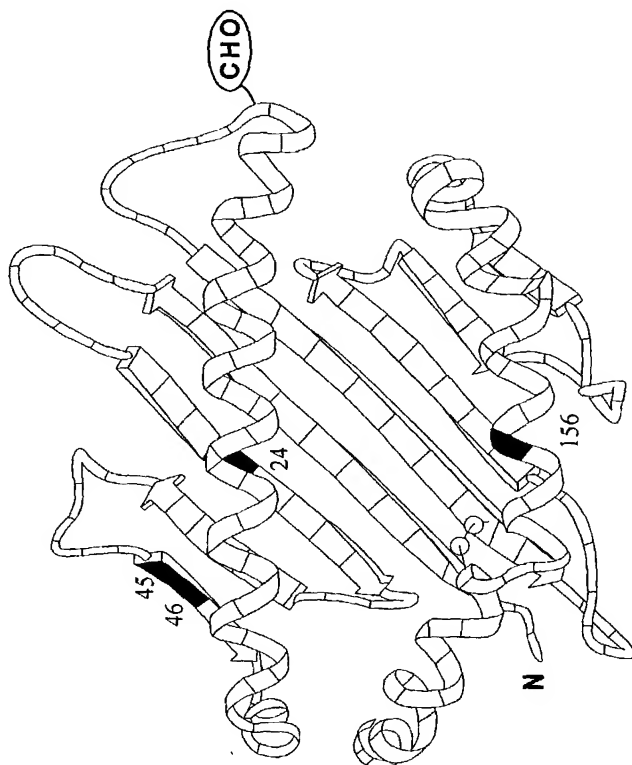
Fig. 16 1 of 5



B*1512

	1	2	3	4	5	6	7	8	9
dominant	-	Q	K	P	-	-	-	-	Y
			F	E					F
			R	H	V	N			
strong	-	L	I	D	T	-	-	-	Y
		M	A	G					

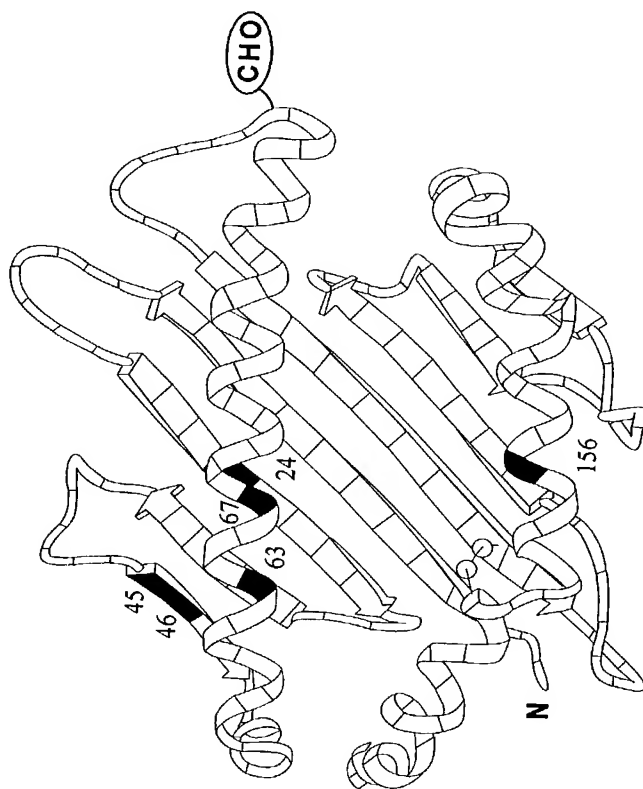
Fig. 16 2 of 5



B*1503

	1	2	3	4	5	6	7	8	9
dominant	-	Q	F	P	-	-	-	-	Y
		K	Y	R	V	I	N	A	
strong	-	M	H	G	-	R	-	-	F
		L	E	P	D	V			

Fig. 16 3 of 5



B*1518

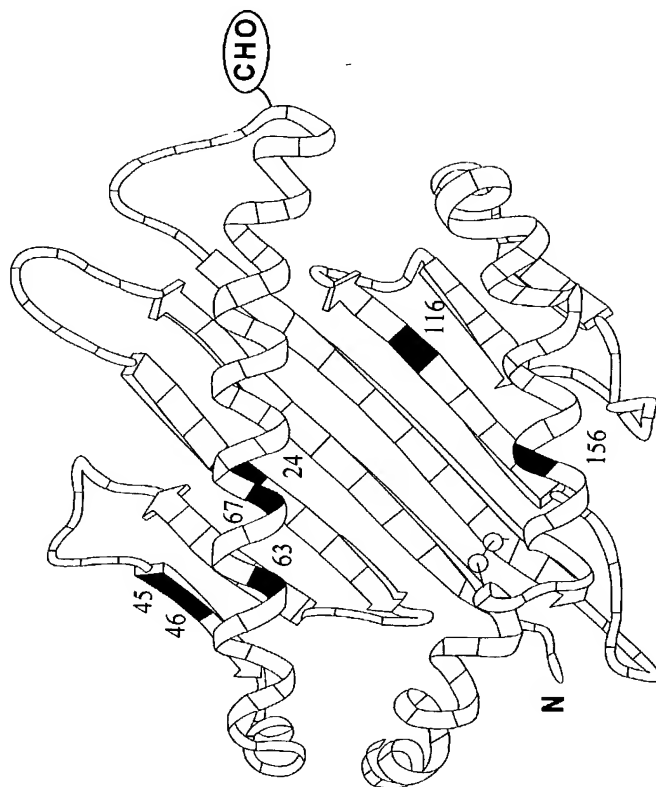
	1	2	3	4	5	6	7	8	9
dominant	-	H	F	-	-	-	-	-	Y
strong	-	-	I	P	-	V	I	-	F
			M	E					
			H						
			K						
			W						

Fig. 16 4 of 5

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B*1510

	1	2	3	4	5	6	7	8	9
dominant	-	H	Y	P	-	-	-	-	L
		A	I	K	S	F	L	V	T
strong	-	-	G	R	R	I	M	-	F
		D	D	V			L		
		E	K						
		M	E						
		N							

Fig. 16 5 of 5

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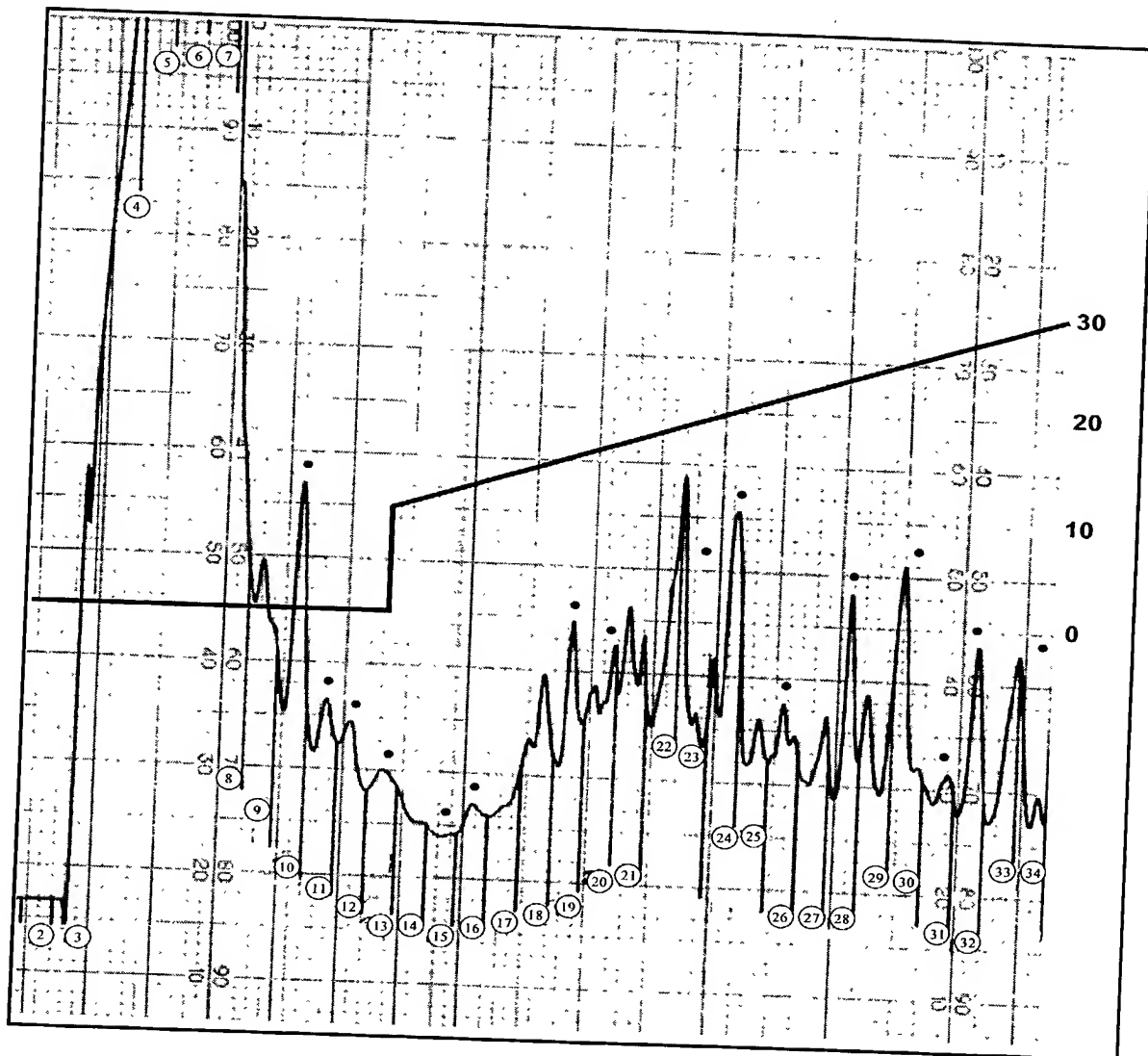
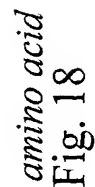


Fig. 17

11-11-1964



Fraction 10												
Position:	2	3	4	5	6	7	8	9	10	11	12	
Dominant	P	Q										
strong	W	K	G									
		R	F									
		H										
weak	S	E	D	S	H	V	I	Y	K	V	E	
	I		N	W	S	T						
			M	P								
			I									

Fraction 15												
Position:	2	3	4	5	6	7	8	9	10	11	12	
Dominant	P	Q										
strong	W	K	G									
		R	F									
		H										
weak	S	E	D	S	H	V	I	Y	K	V	E	
	I		N	W	S	T						
			M	P								
			I									

Fraction 31										
Position:	2	3	4	5	6	7	8	9	10	
Dominant	-	K		W						
strong	S	H	N	R	S	F	-	G	F	
	Q			M	Y	V				
weak	L	Y	A	-	L	-	Y	Y	-	
		L			K		S			
		V					K			

Fraction 28												
Position:	2	3	4	5	6	7	8	9	10	11	12	
Dominant	K											
strong	Q	H	G	L	R	I	D	K	V	E	-	
	V	N		S			N					
	P	R		H								
weak	-	P	E	P	V	P	Q	Y	-	F	S	
		F	E	E	A	M	E	F		P	K	
		K		F			A					
		D					H					
							W					

Fig. 19

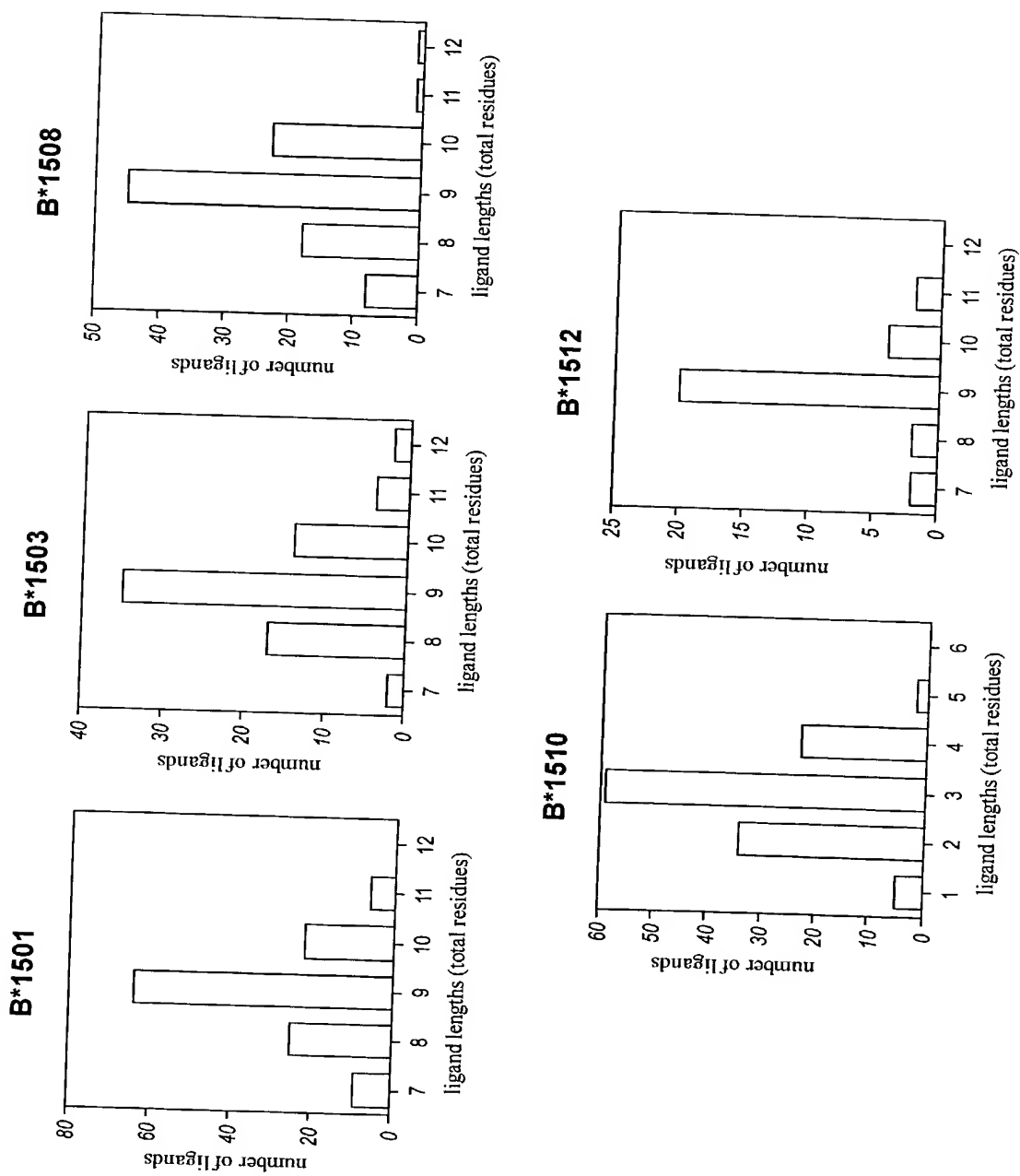
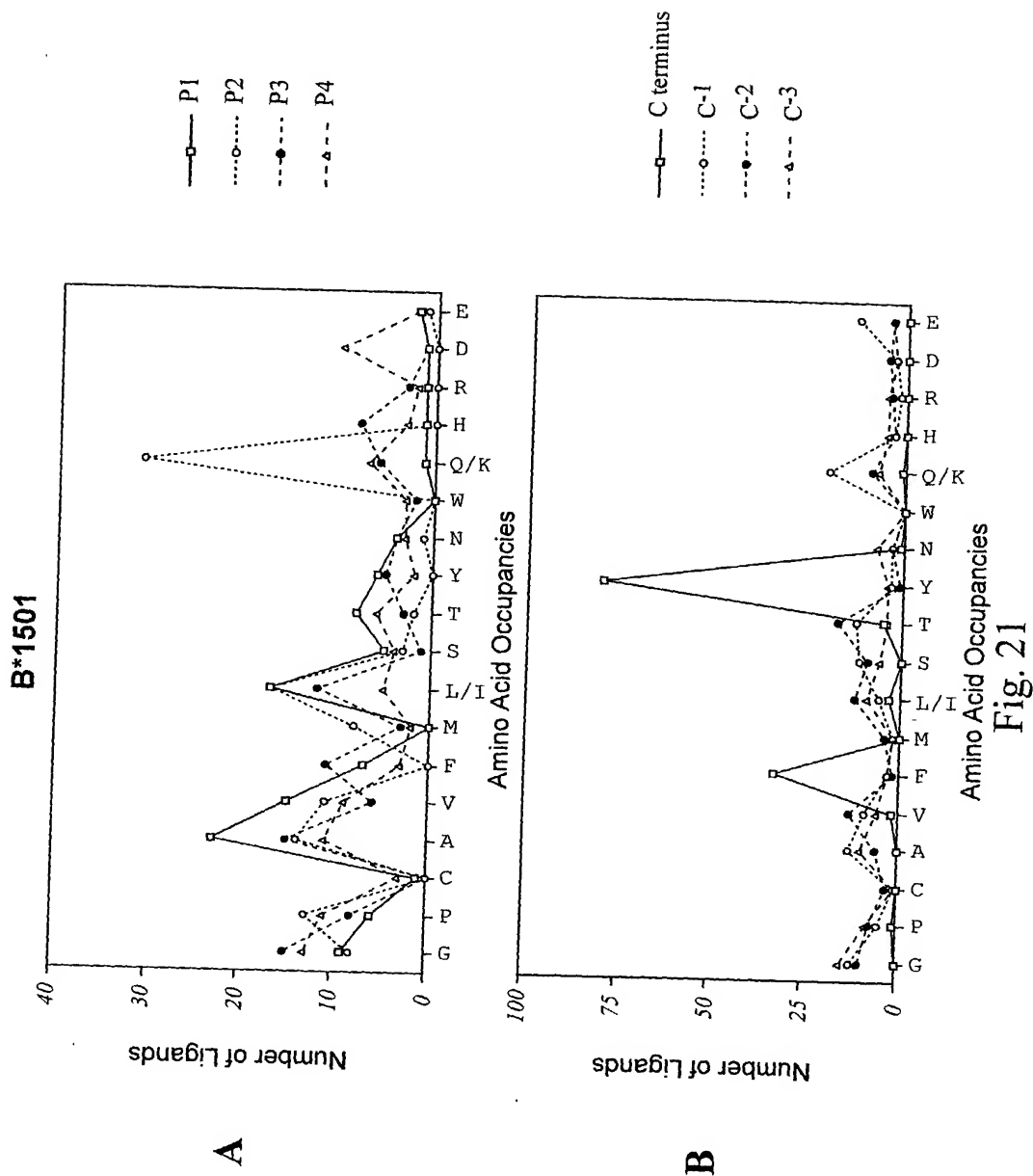
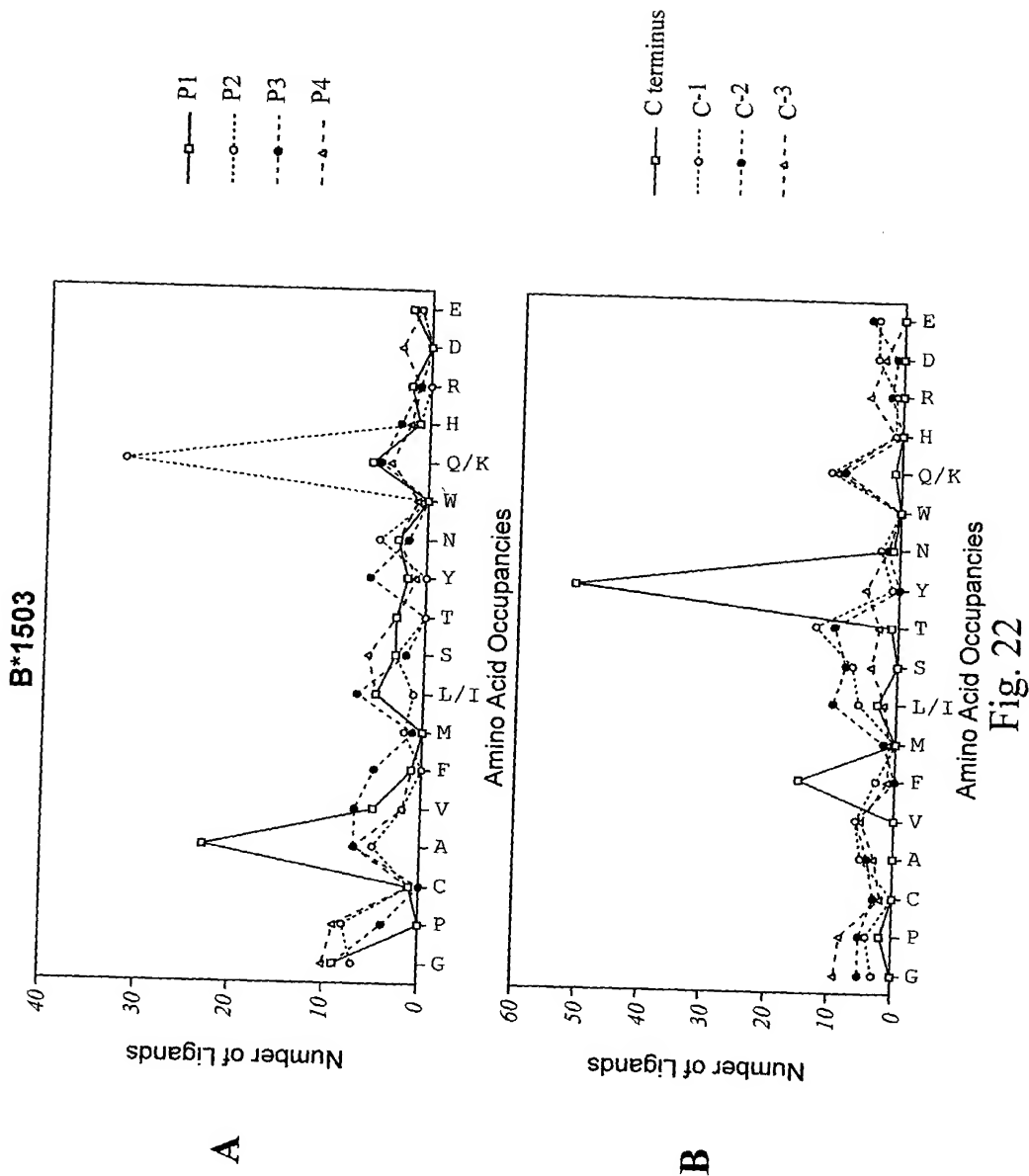


Fig. 20

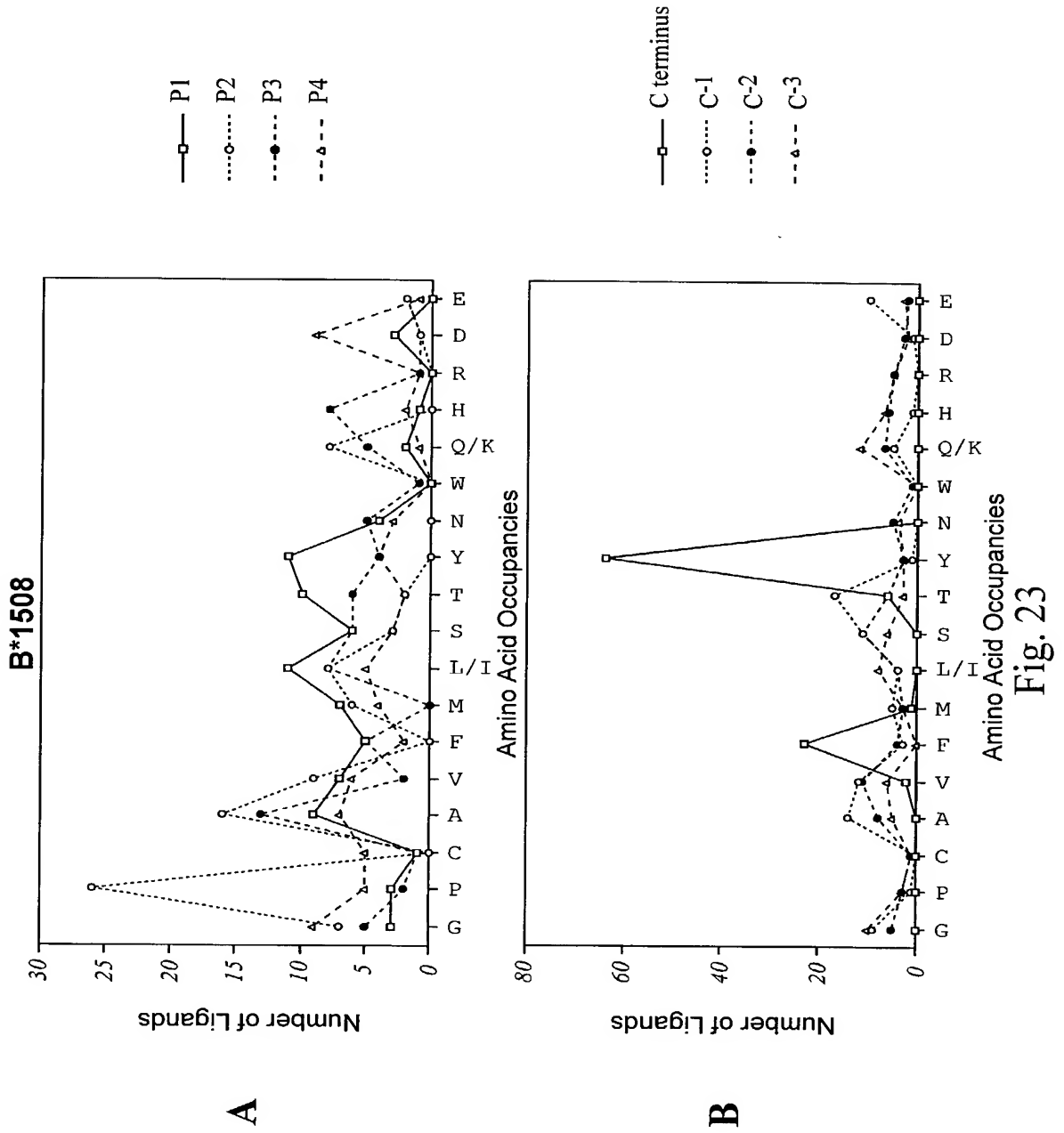


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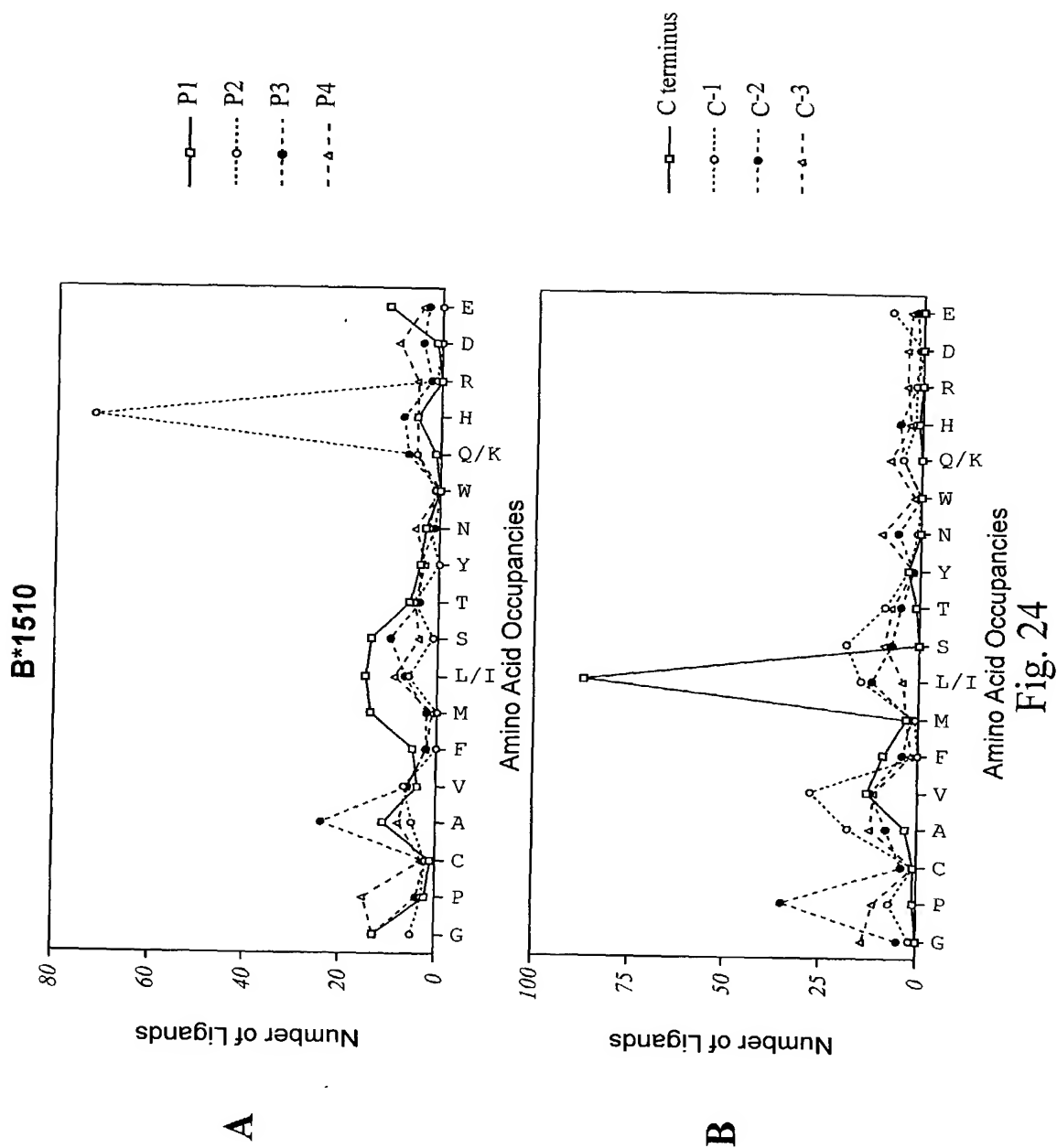
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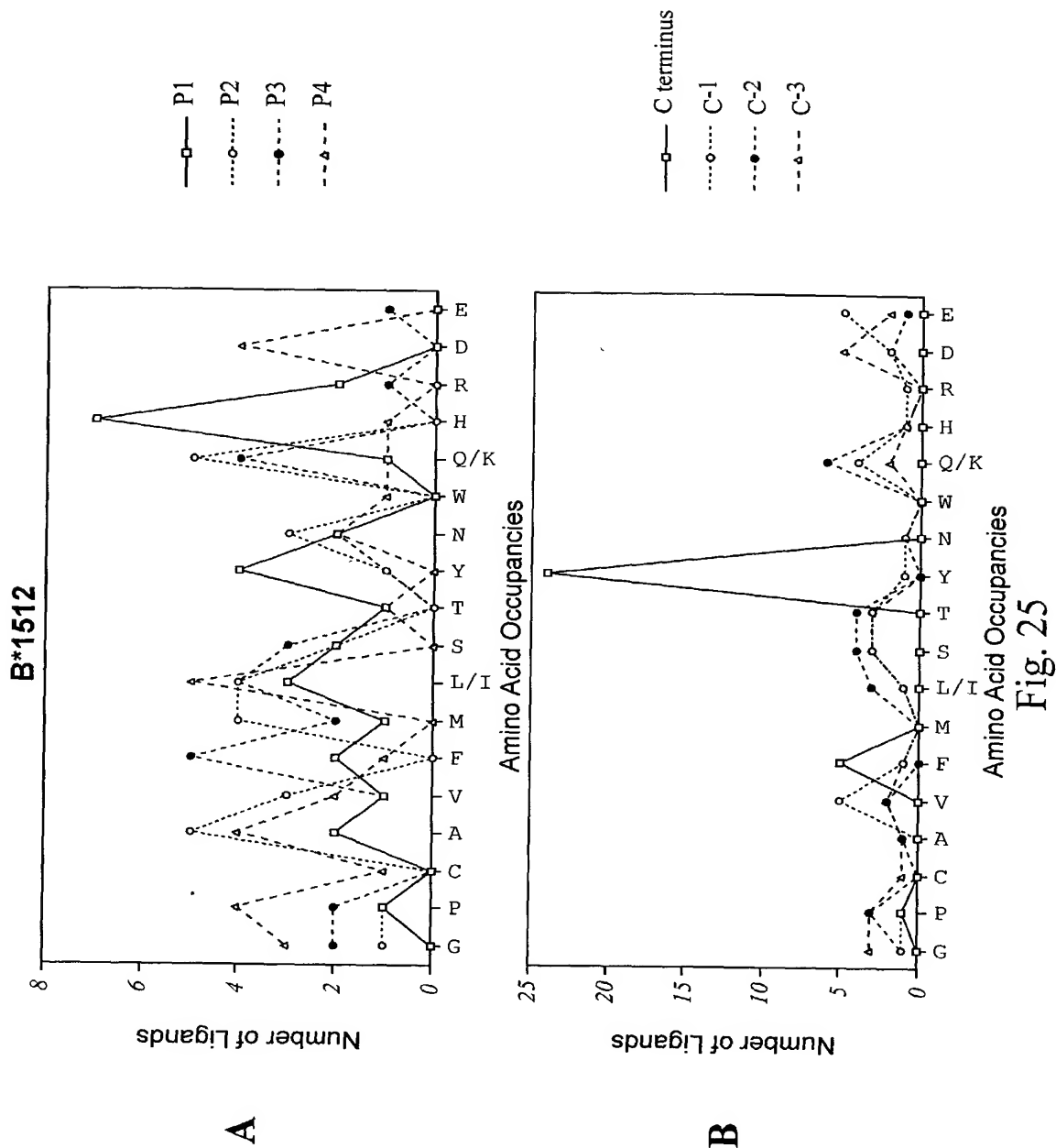
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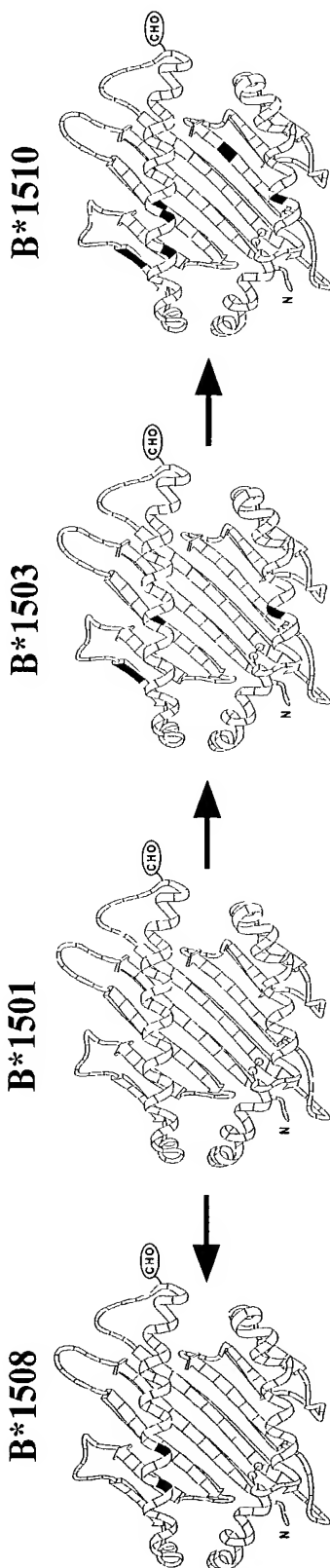


Fig. 26

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[Handwritten musical notation]

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B*1510 cont.

B*1503 cont.

B*1501 cont.

B*1508 cont.

```
--WDRHTXF
-----YT
GSHFGVAY
TG-----AY
FVSNHAY
SQFDHVTY
XAN--VT
FLZAMZSTY
TVXDSZTHY
VVACV---Y
PLA-N-HTY
VVAPITIGY
FQARXTEY
VGYYVDDTQF
-----XVEF
TARVXSVEY
AAFCG---XV
YLH--ET
ILGPPGSVY
XLGDVNMV
YMIDPSGVSY

--WDRHTXF
-----YT
GSHFGVAY
TG-----AY
FVSNHAY
SQFDHVTY
XAN--VT
FLZAMZSTY
TVXDSZTHY
VVACV---Y
PLA-N-HTY
VVAPITIGY
FQARXTEY
VGYYVDDTQF
-----XVEF
TARVXSVEY
AAFCG---XV
YLH--ET
ILGPPGSVY
XLGDVNMV
YMIDPSGVSY
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NQZHGAEY
 TPXGEPYZSY
 SQFGGSQY
 CPLSCFT

NQZHGSAEY
TPXGEPYZSY
SQFGGSQY
CPLSCFT

AQFASGAGZ
-G--CDY
APMARGZY
GQZZAVDF
NPPAZZPN
-Q-DPPDMZ
GQKAGSVFF
AEFWACZXY

A Q F A S G A G Z
 - G - - C D Y
 A P M A R G Z Y
 G Q Z Z A V D F
 N P P A Z Z P N
 - Q - D P P P D M Z Y
 G Q R K G A G S V F
 A E F W A C Z X Y

Fig. 26 cont.

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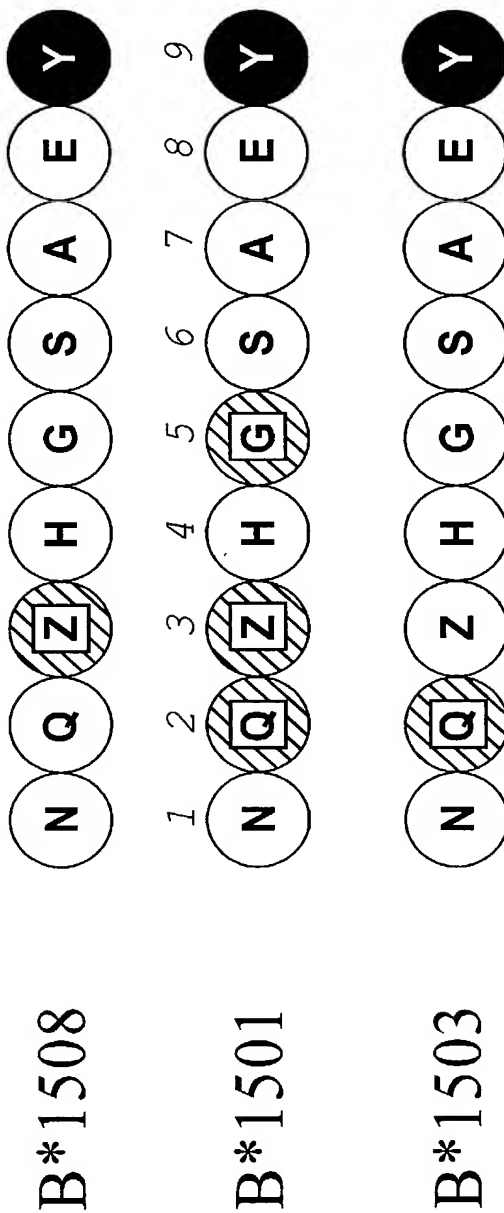


Fig. 27

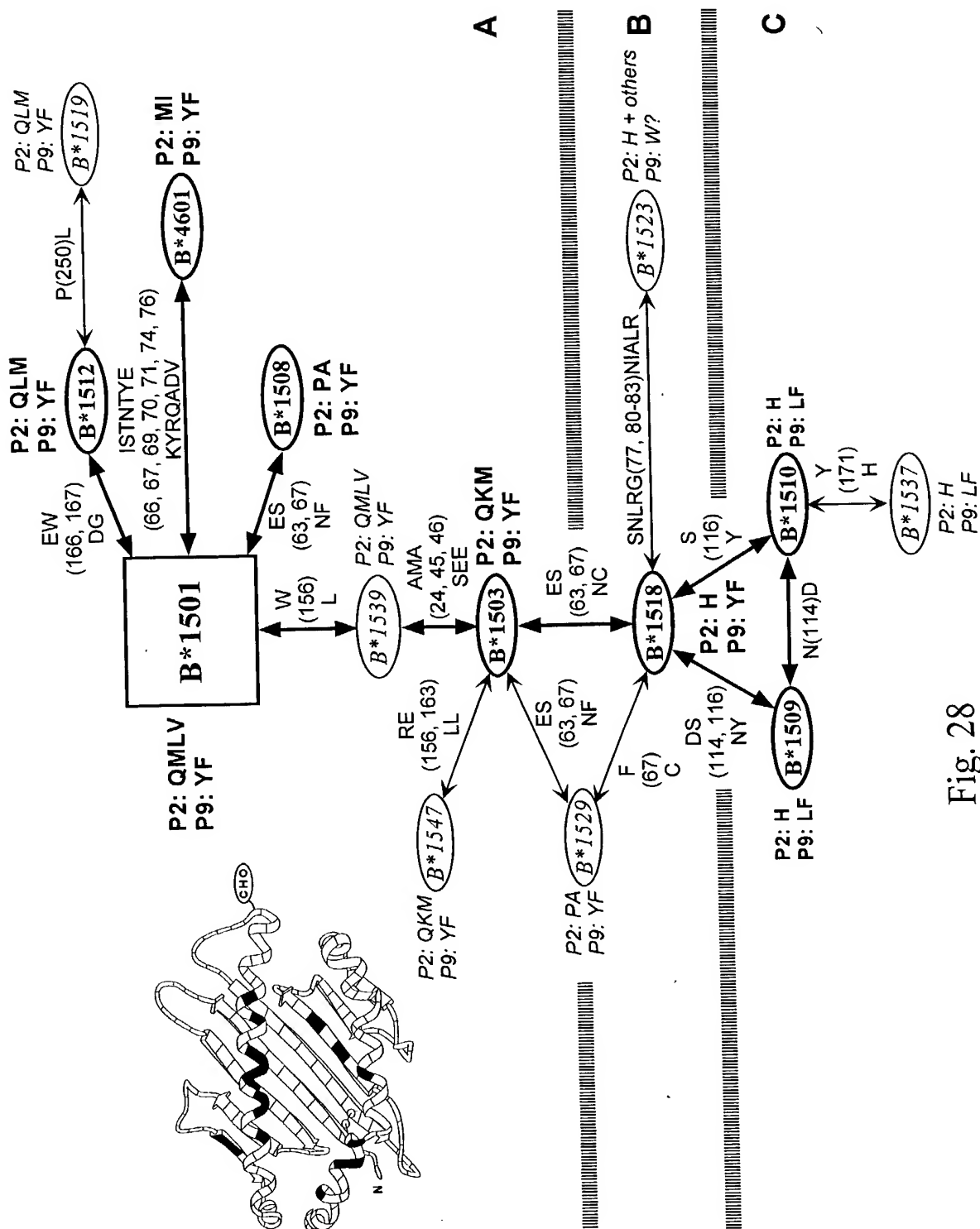
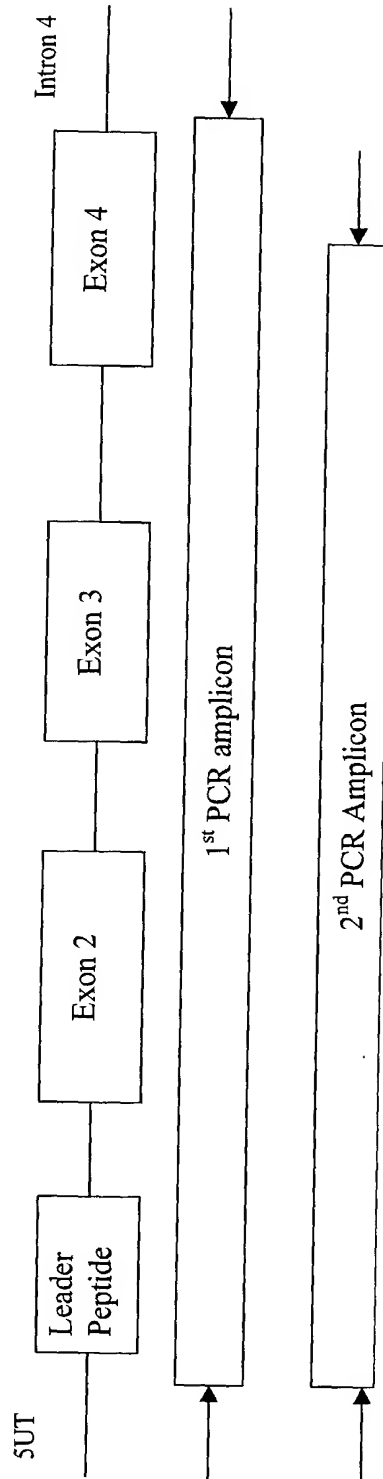


Fig. 28



PCR Strategy
Fig. 29

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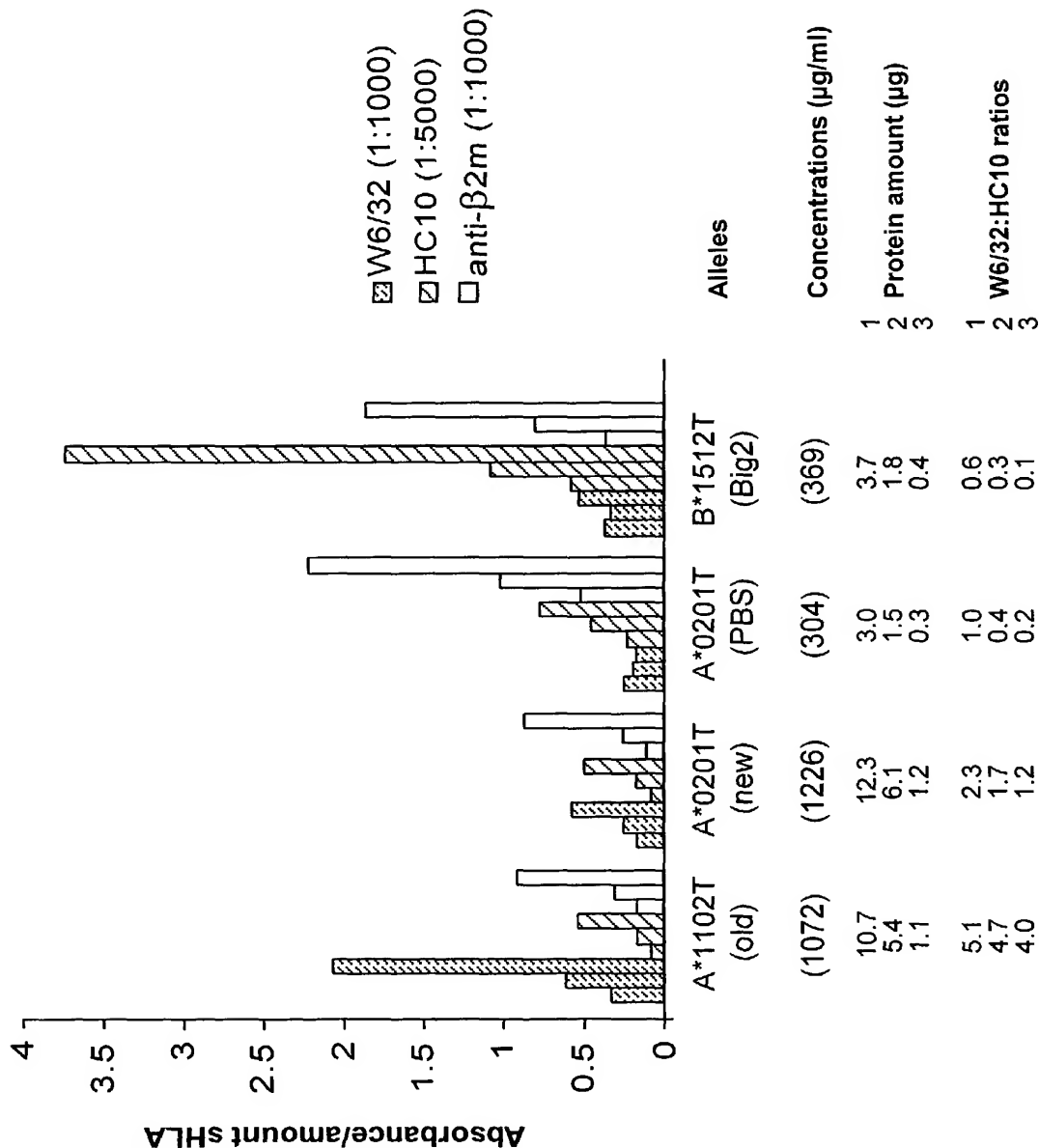


Fig. 34

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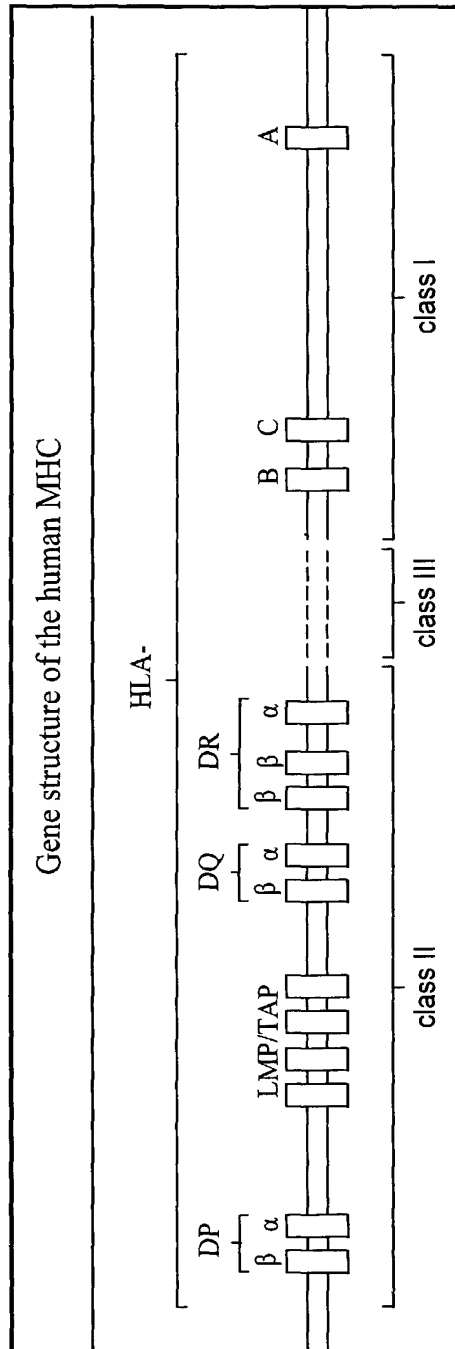


Fig. 35

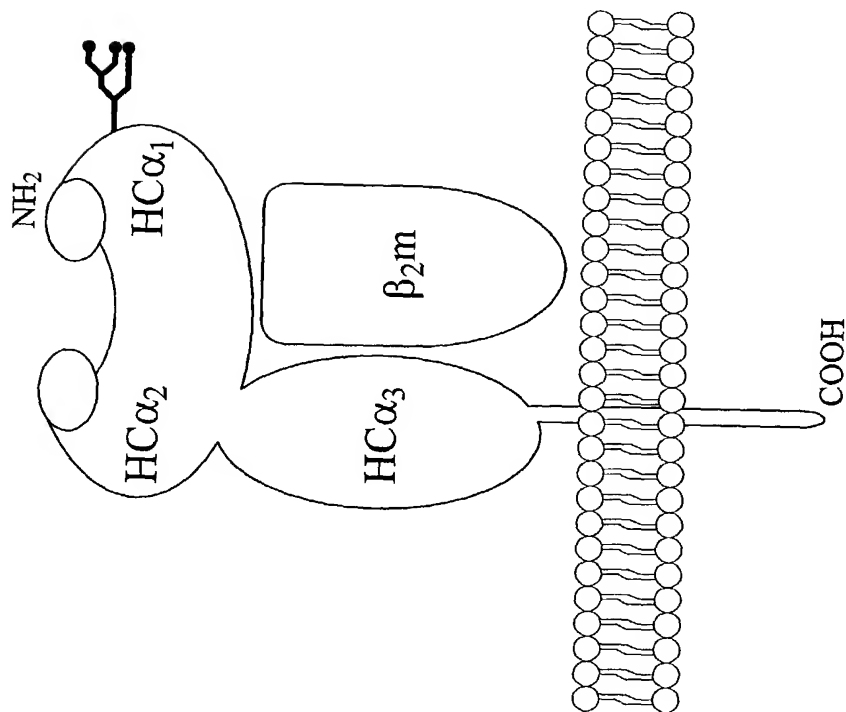


Fig. 36

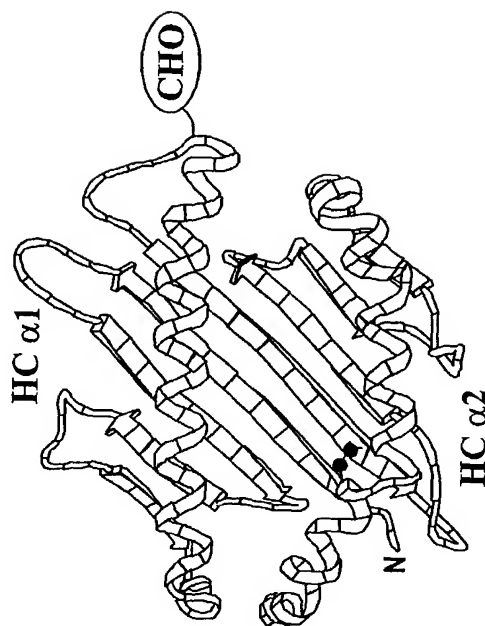


Fig. 37

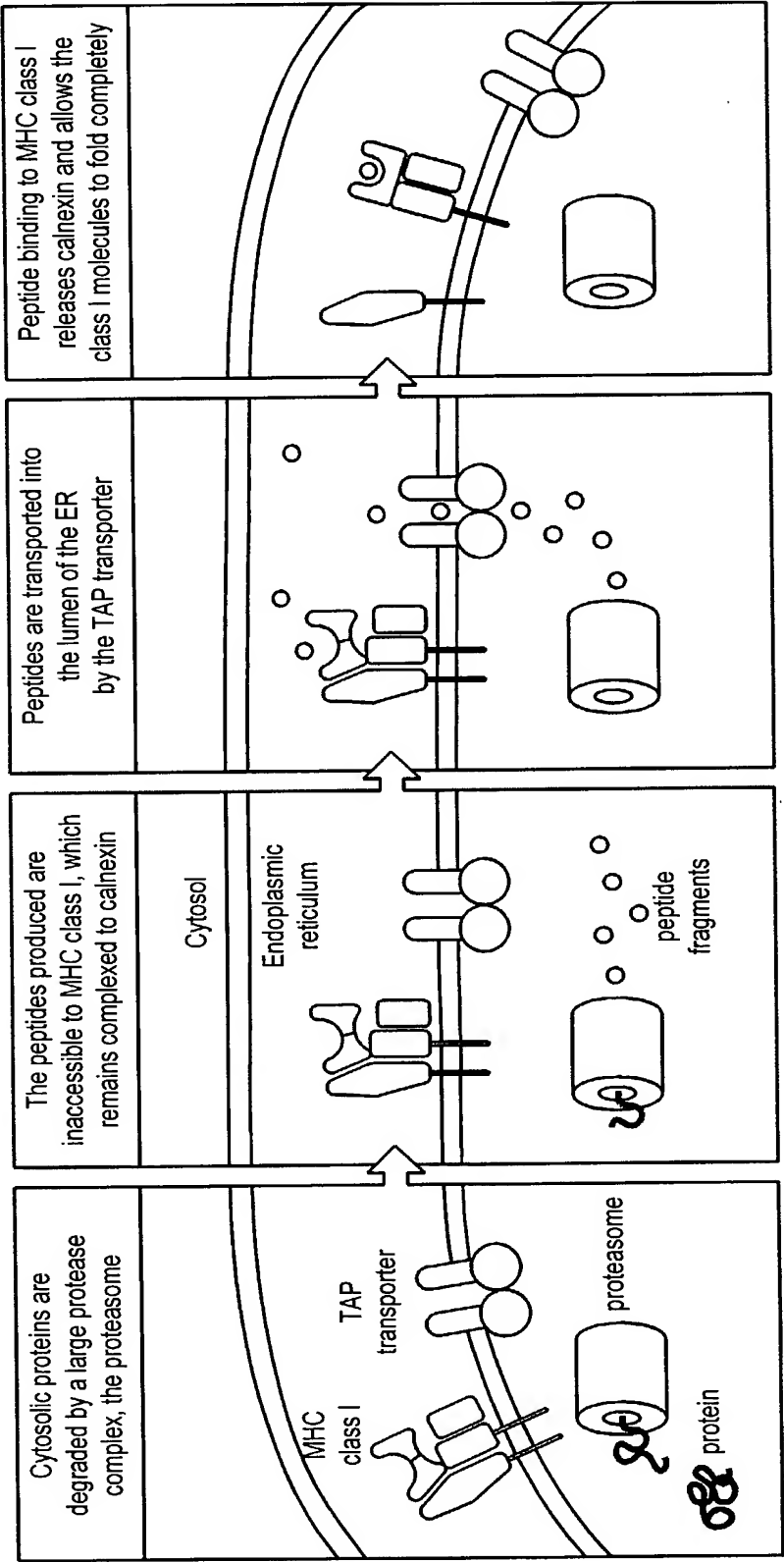


Fig. 38

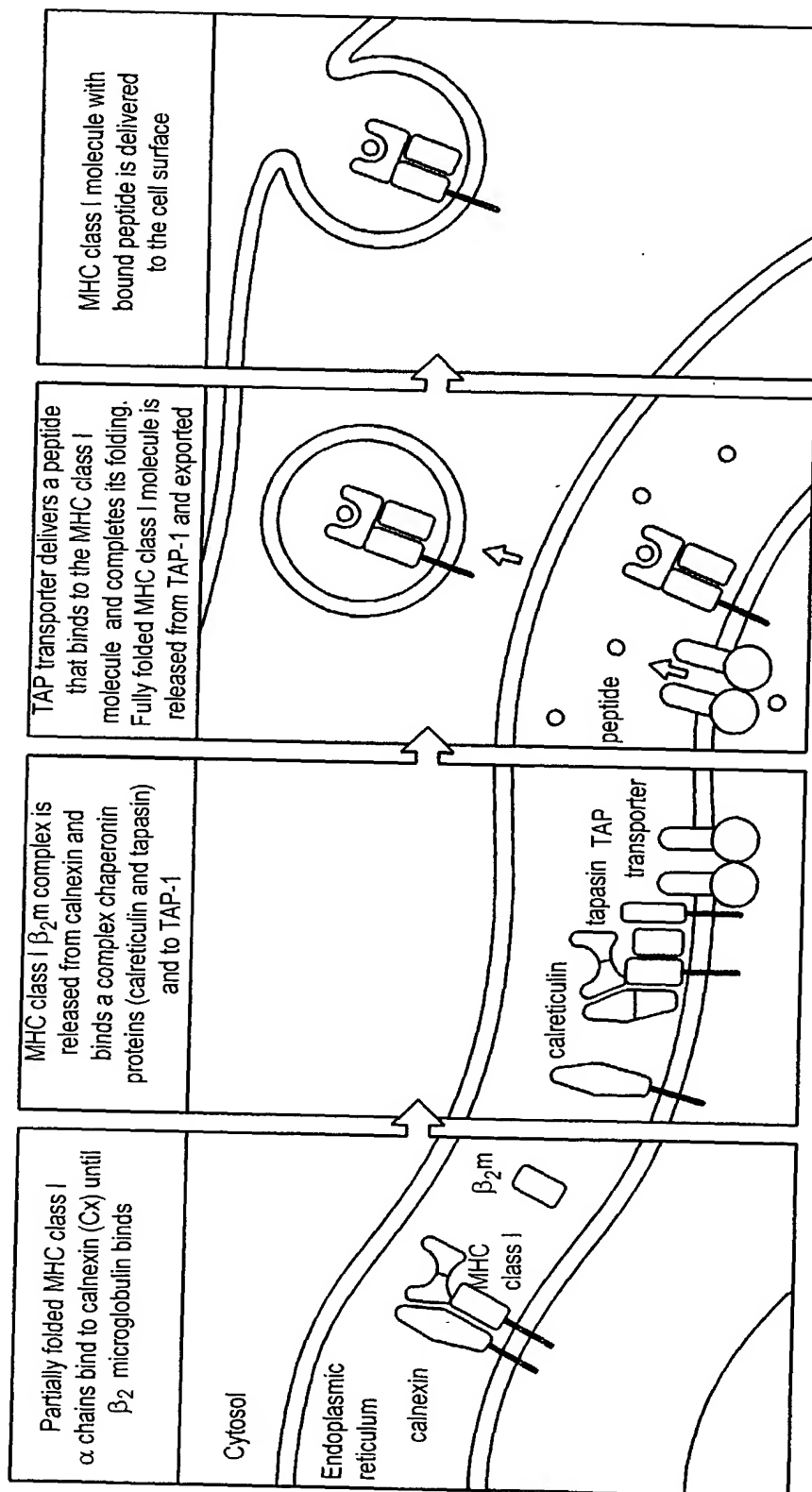


Fig. 39

Serial No. 10/022,066
Title: METHOD AND APPARATUS FOR THE PRODUCTION OF
SOLUBLE MHC ANTIGENS AND USES THEREOF
Applicant: William Hildebrand, et al. Group No.: 1652
Filed: 12/18/2001 Examiner: Not Yet Assigned
Atty: Douglas J. Sorocco Tel: (405) 478-5344
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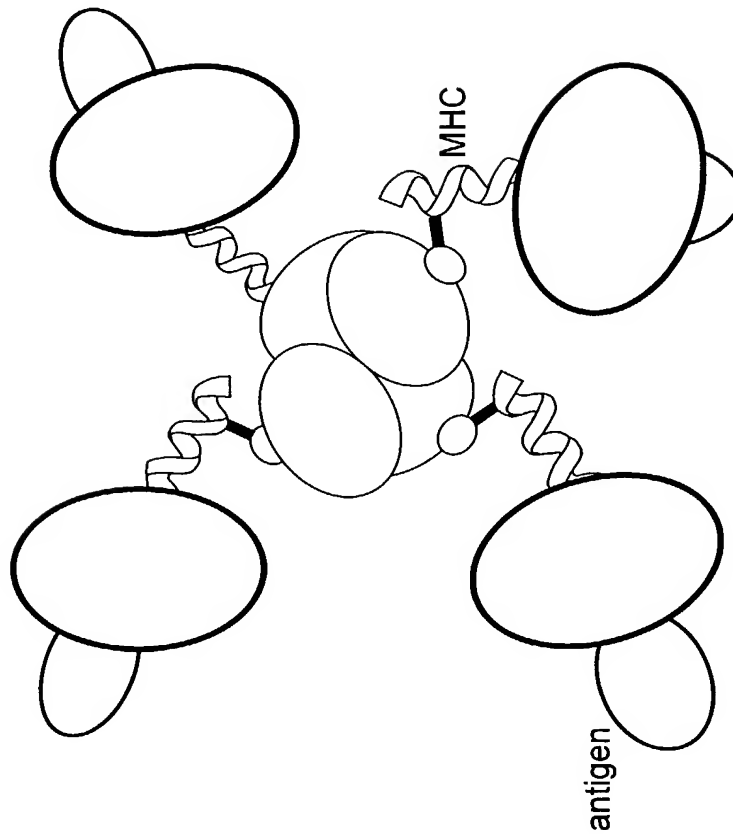


Fig. 40

Serial No. 10/022,066
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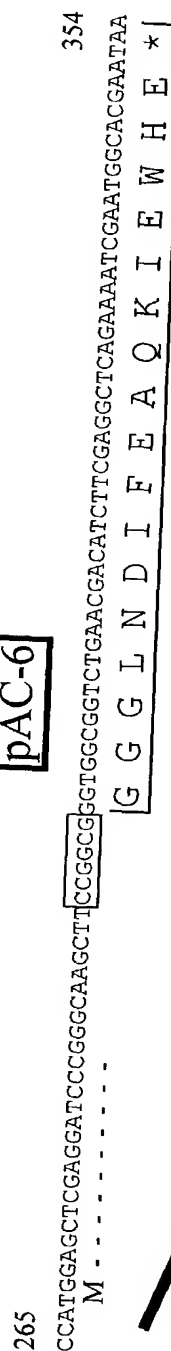
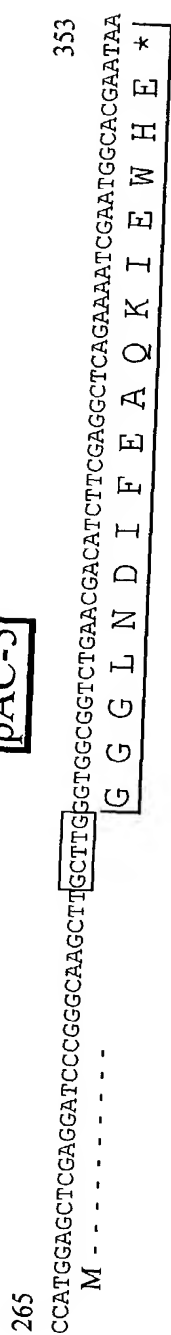
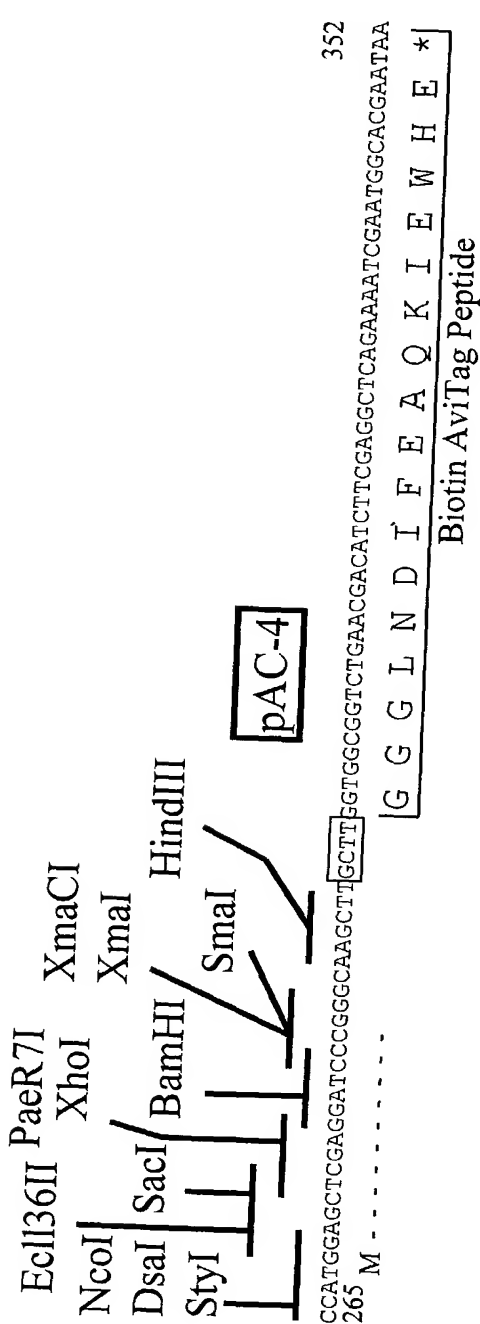


Fig. 41 1 of 3

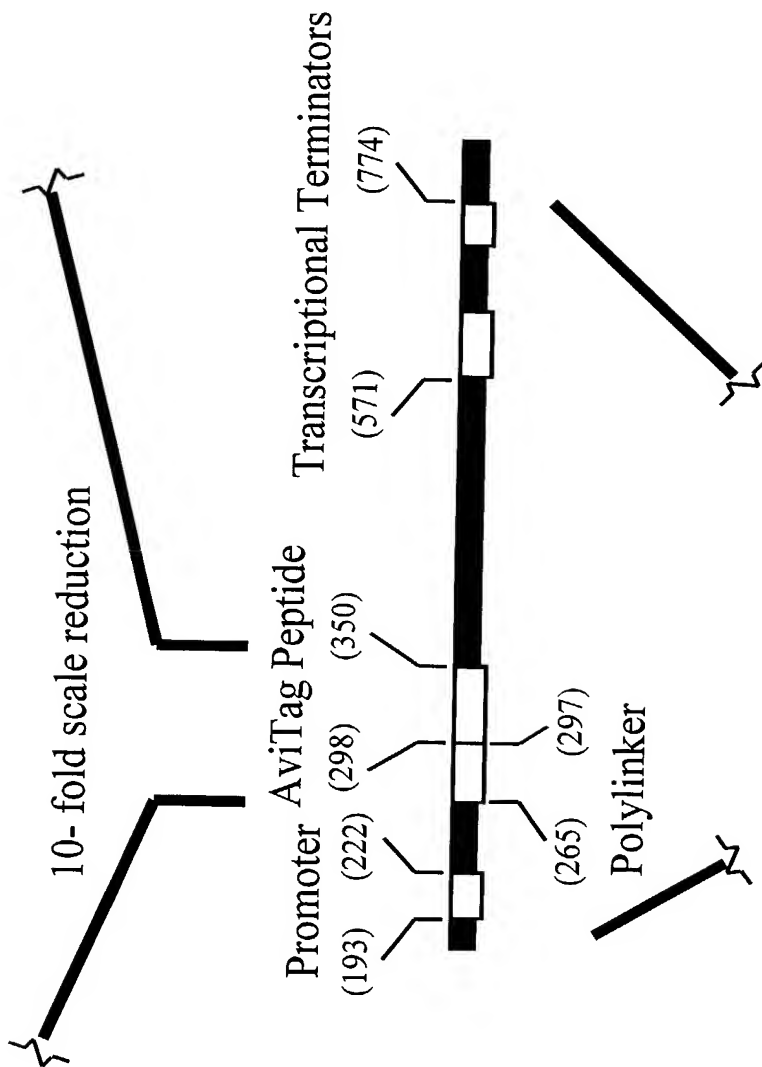


Fig. 41 2 of 3

Serial No. 10/022,066
Title: METHOD AND APPARATUS FOR THE PRODUCTION OF
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Applicant: William Hildebrand, et al. Group No.: 1652
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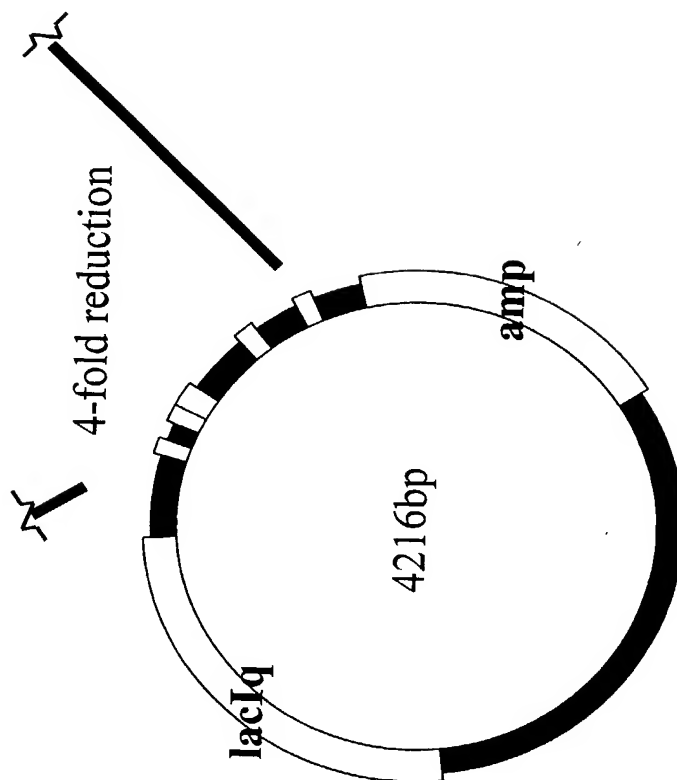


Fig. 41³ of 3

Serial No. 10/022,066
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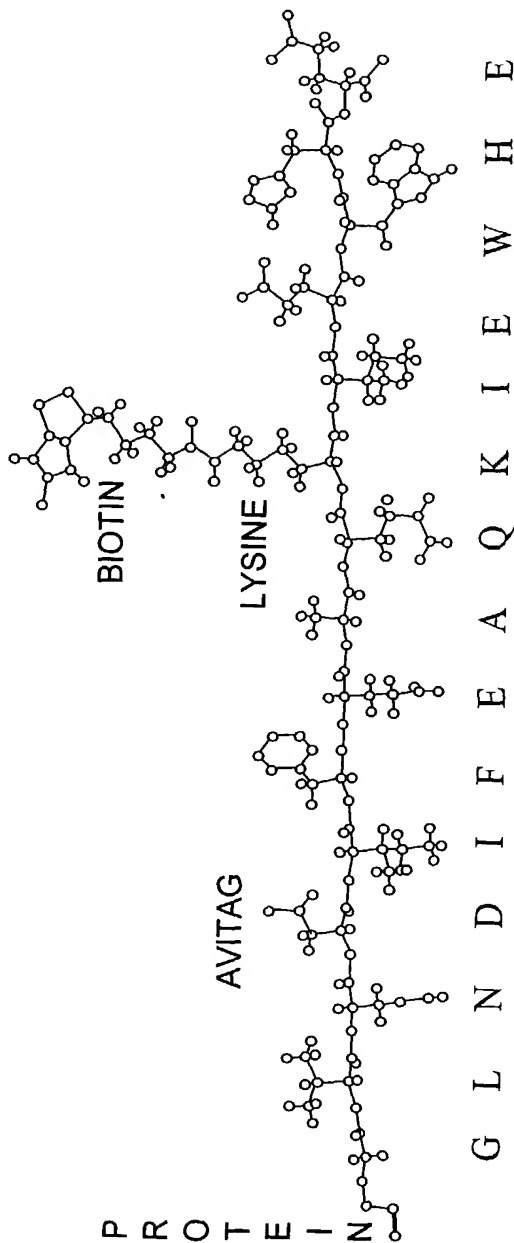


Fig. 42

Serial No. 10/022,066
Title: METHOD AND APPARATUS FOR THE PRODUCTION OF
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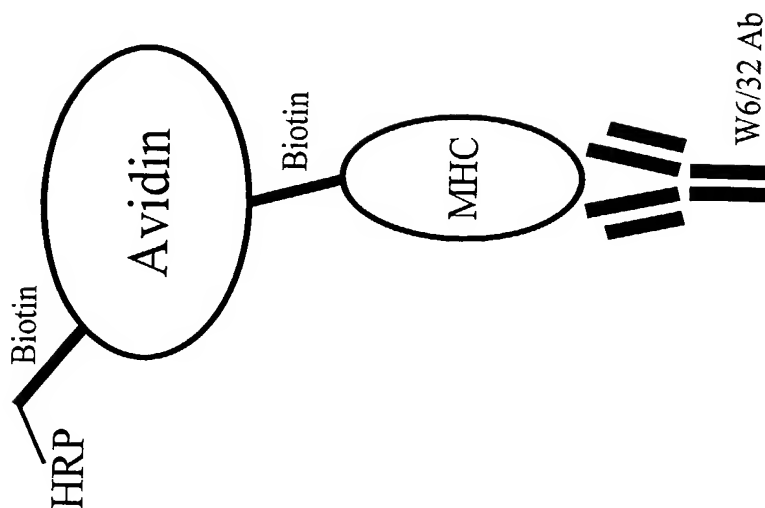


Fig. 43

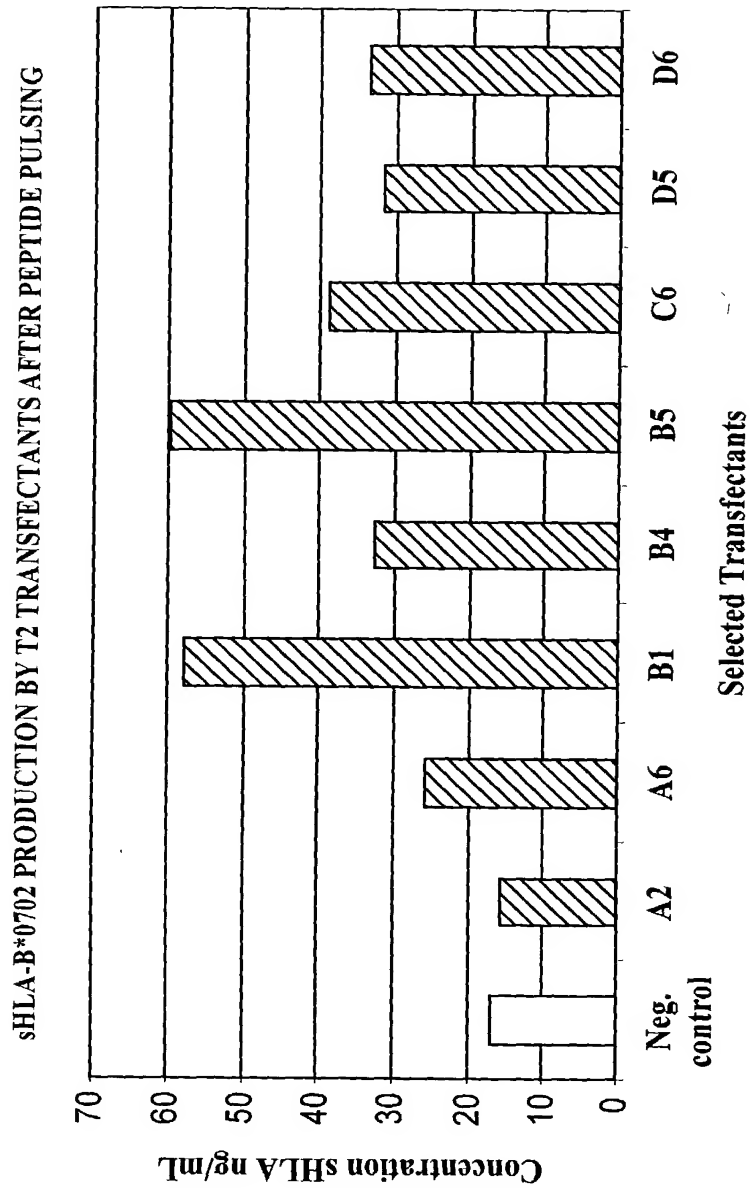


Fig. 44

Serial No. 10/022,066
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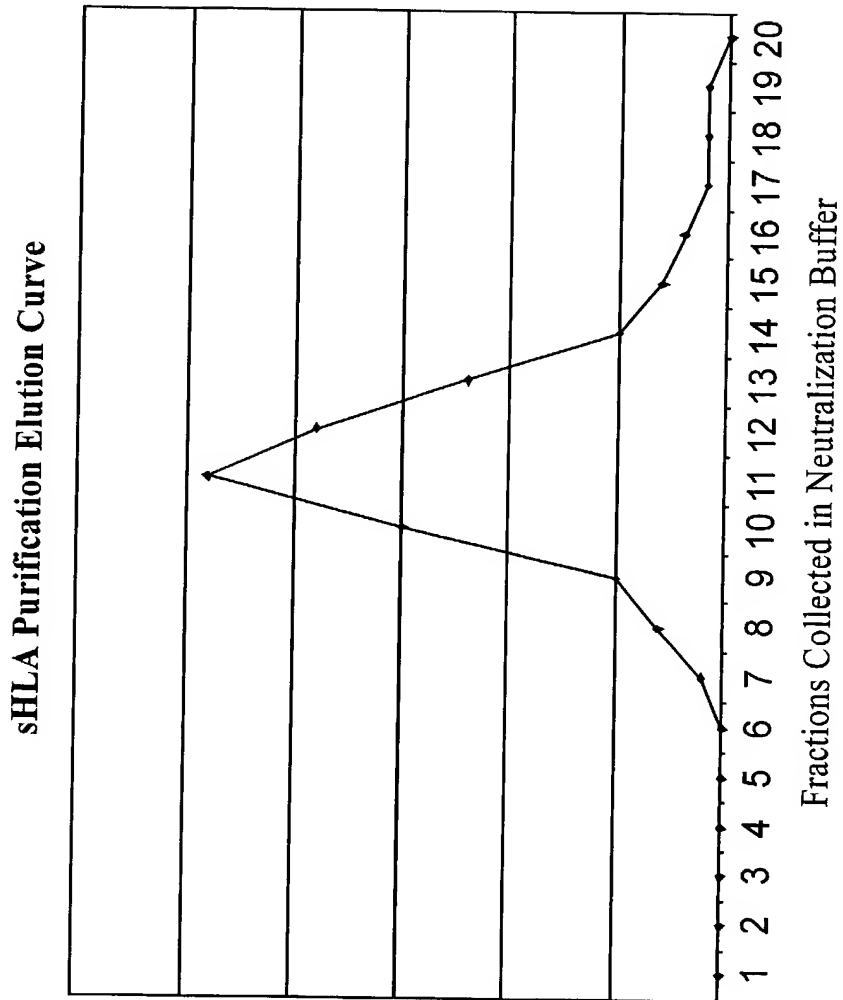


Fig. 45

Serial No. 10/022,066
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Applicant: William Hildebrand, et al. Group No.: 1652
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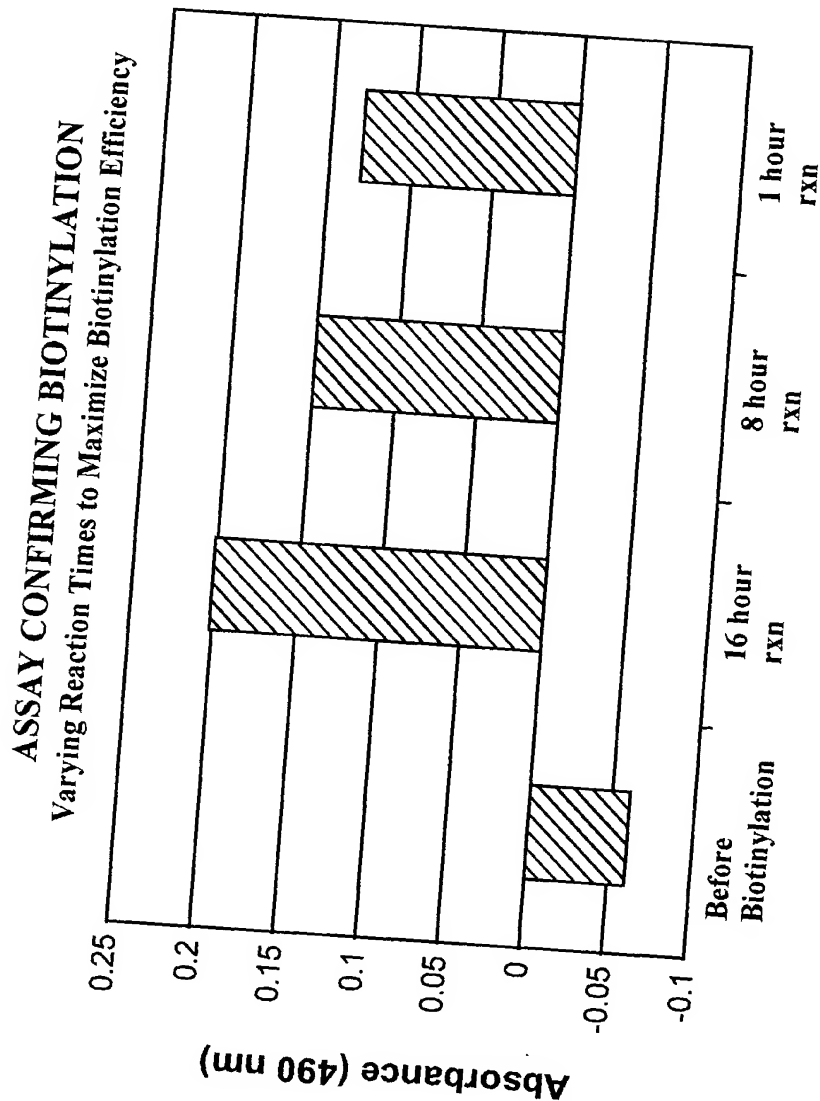


Fig. 46

Serial No. 10/022,066
 Title: METHOD AND APPARATUS FOR THE PRODUCTION OF SOLUBLE MHC ANTIGENS AND USES THEREOF
 Applicant: William Hildebrand, et al. Group No.: 1652
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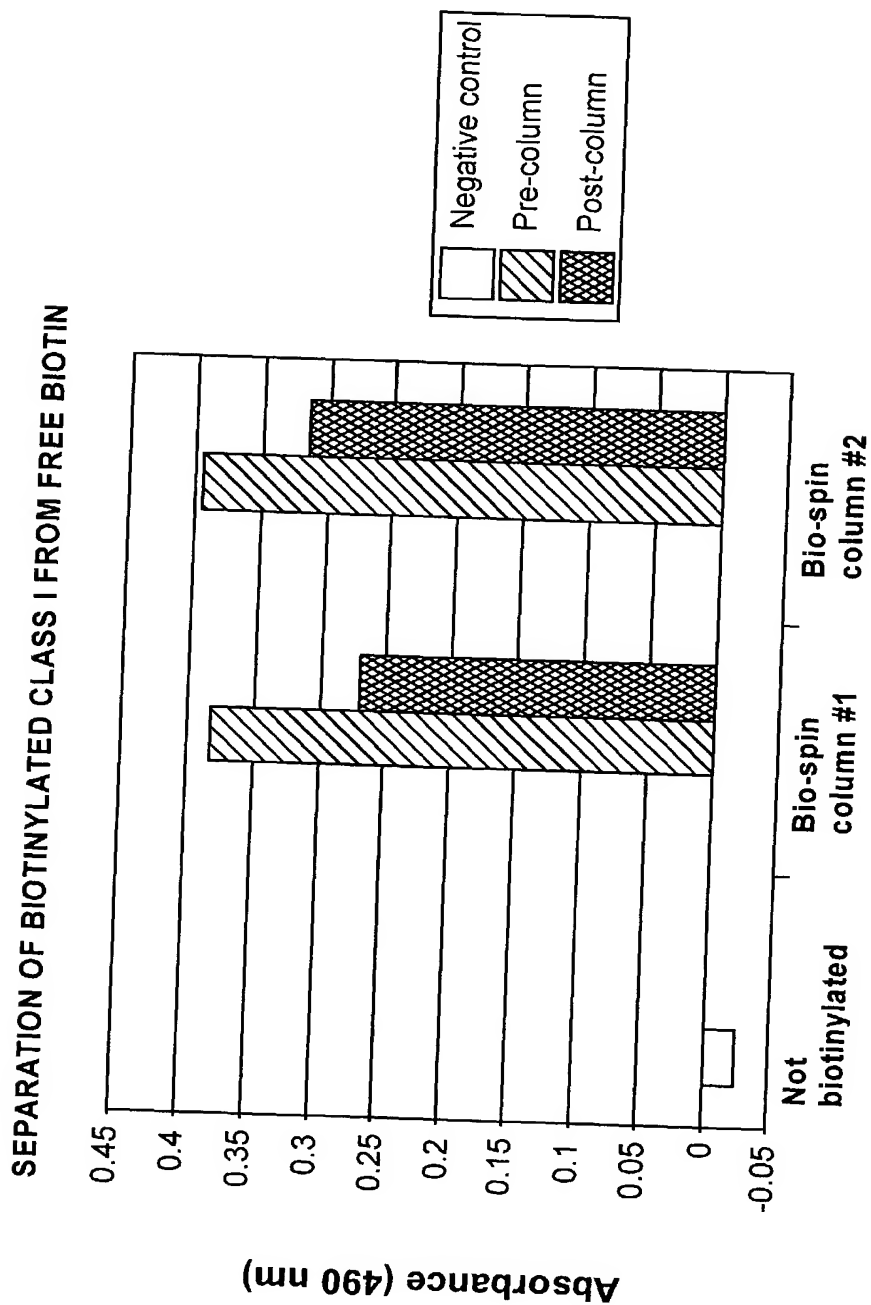


Fig. 47

Serial No. 10/022,066
 Title: METHOD AND APPARATUS FOR THE PRODUCTION OF
 SOLUBLE MHC ANTIGENS AND USES THEREOF
 Applicant: William Hildebrand, et al. Group No.: 1652
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consensus	ethnicity									
	24	45	46	63	67	116	156	166	167	
B*1512	A	M	A	E	S	S	-	D	G	Thai
B*1508	-	-	-	N	F	-	-	-	-	Iranian/Indian/Amerindian
B*1501	-	-	-	-	-	-	-	-	-	Caucasian
B*1503	S	E	E	-	-	-	L	-	-	Black
B*1518	S	E	E	N	C	-	L	-	-	Indian
B*1510	S	E	E	N	C	Y	L	-	-	Black

TABLE 1

primer	type	sequence (5'→3')
HLA5UT	PCR (5'; inserts <i>SalI</i> site)	GGGCGTCGACGGACTCAGAAATCTCCCCAGACGCCGAG
sHLA3TM	PCR (3'; inserts stop codon and <i>HindIII</i> site)	CCGCAAGCTTTCA TCTCAGGGTGAG
5PXI	PCR (5'; inserts <i>XbaI</i> site)	GGGCTCTAGAGGACTCAGAAATCTCCCCAGACGCCGAG
3PEI	PCR (3'; inserts stop codon and <i>EcoRI</i> site)	CCGCGAATTCTCA TCTCAGGGTGAG
M13 universal	sequencing (mp18, end through α_3) (mp19, leader through α_2)	TGTAAAACGACGGCCAGT
3S	sequencing (α_2 through α_3)	CGGCAAGGATTACATCGCCCTG
JD3S	sequencing (α_3 through end)	CCCCATCGTGGGCATCGTTG
3N	sequencing (α_2 through leader)	CAGGGCGATGTAATCCTTGCCG
4N	sequencing (α_3 through α_2)	GCCAGGTCAGTGTGATCTCCGC
T7 promoter	sequencing (T7 promoter forward priming site)	TAATACGACTCACTATAGGG
pcDNA3.1/BGH	sequencing (BGH reverse priming site)	TAGAAGGCACAGTCGAGG

TABLE 2

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allele	# fractions	P2 extras	P9 extras	>9 cycles?
B*1501	7	P	-	yes (14)
B*1508	8	QVKRS	IVMQ	yes (14)
B*1503	3	P	MNL	yes (14)
B*1510	3	PR	MIY	yes (14)

TABLE 3

ligand	source protein	allele(s) characterized from
<i>HLA ligands</i>		
VGYVDDTQF	HLA-I α (49-57)	B*1501, 1508
IAVGYVDDTQ F	HLA-I α (47-57)	B*1501, B*1512
IKADHVSTY	HLA-II DP α (32-40)	B*1503
GSHSMRYF	HLA-I α (25-32)	B*1503
<i>Replication/transcription/translation ligands</i>		
GQRKGAGSVF	60S ribosomal protein L8 (7-16)	B*1501, 1503
AQAESLRY	40S ribosomal protein S3 (100-107)	B*1501
GKVRTDITY	40S ribosomal protein S4 (73-81)	B*1503
SHAQTVVL	40S ribosomal protein S27 (48-55)	B*1510
SQFGGGSQY	eIF3-p66 (61-69)	B*1501, 1503, 1508, B*1512
VQGPVGTDF	zinc finger transcription factor (296-304)	B*1501
APPPPPPPP	transcription factor ZFM1 (581-589)	B*1501
YQHTGAVL	spleen mitotic checkpoint BUB3 (53-60)	B*1510
AHGRKMSKSL	valyl-tRNA synthetase (859-868)	B*1510
LPHQPLATY	Oct-binding factor 1 (52-60)	B*1508
AKYSTPATL	probable ATP-dependent RNA helicase DDX10 (280-288)	B*1503
AKAGITTTL	DNA replication licensing factor MCM5 (470-478)	B*1503
TQAPGNPVL	splicing factor U2AF large chain (179-187)	B*1510
SHQRQLLL	Kin17 (49-56)	B*1510
NQFQALLQY	polypyrimidine tract-binding protein (220- 228)	B*1512
<i>Biosynthetic/degradative modification ligands</i>		
FVSNHAY	aldolase A (358-364)	B*1501, 1508
ILGPPGSVY	ubiquitin-protein ligase (83-91)	B*1501, B*1502, 1508, B*1512
YMIDPSGVSY	proteasome subunit C8 (150-159)	B*1501, B*1502, 1508, B*4601, B*1512
NHAIVSTSV	26S protease (S4) regulatory subunit (741- 749)	B*1510
IHTPENPVI	lanosterol 14-alpha demethylase (488-496)	B*1510

TABLE 4

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AHSNLA SVL	O-linked GlcNAc transferase (237-245)	B*1510
Signalling/modulatory ligands		
VVAPIT TGY	calcyclin binding protein (63-71)	B*1501, B*1508
GHSPT TSSL	tyrosine-protein kinase JAK3 (491-499)	B*1510
LPPPP PPPP	Fas antigen ligand (54-62)	B*1503
NHANGL TL	serine/threonine protein phosphatase PP2A (α and β) (229-236)	B*1510
Transporter/chaperone ligands		
EHVASS PAL	13S Golgi transport complex 90 kD subunit (741-749)	B*1510
HHSDGS VS L	tapasin (354-362)	B*1509, B*1510
QPGPQ IVY	GABA/noradrenaline transporter (261-268)	B*1503
Structural/cytokinesis ligands		
NMNDLV SEY	tubulin β chain (414-422)	B*1508
THTQPG VQL	septin 2 homolog (70-78)	B*1509, B*1510
SHANS AVVL	β -adaptin (249-257)	B*1509, B*1510
Unknown function ligands		
GQYPTQ PTY	KIAA0058 (5-13); like <i>Mus musculus</i> proline-rich protein	B*1503
VKVIQQ ES Y	mammary tumor-associated protein INT6 (278-286)	B*1503
AKYPHV EDY	Ki nuclear autoantigen (207-215)	B*1503
AMNPTNT VF	heat shock cognate 71 kD protein (60-68)	B*1503
CPLSC FT	human HTGS database	B*1501, B*1503, B*1508
MPHSGY GF	human EST	B*1508
CHSAF AL	human HTGS database	B*1510
LHLLT LEA	human EST	B*1510
KNANLV QLY	human EST	B*1512

TABLE 4 cont'd.

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 Atty: Douglas J. Sorocco Tel: (405) 478-5344
 Dkt. No. 6680.033

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fraction	ion for MS/MS	derived peptide sequence
7	504.1 (+2)	H M S G Z P T S Y
7	549.2 (+2)	H N Z A A H Z E Y
8	526.0 (+2)	H A A X Y S Z V Y
10	484.3 (+2)	Y Q S D H R Y
11	424.3 (+2)	H X S T Z D F
11	464.3 (+2)	H A P T D P P P
11	550.0 (+2)	H G P A N R D S V F
11	563.3 (+2)	F P Y P T D P Z Y
12	531.2 (+2)	Z N A N X V Z X Y
14	585.6 (+2)	R S F X X E N E Y
16	488.7 (+2)	H M Z N P S Y
16	661.9 (+2)	Y V X F - - - V Y
17	577.6 (+2)	R S M X X R C P E Y
18	523.0 (+2)	- - F V T A Z T Y
20	582.4 (+2)	M Y N C N E X D Y
25	562.8 (+2)	N Q F Q A L L Q Y

TABLE 5

ALLELE	7	9	24	25	26	34	35	36	45	62	63	66	67	70	99	159	163	167	
	P2 MOTIF (dominant/strong)																		
consensus	Y	Y	A	V	G	V	R	F	M	R	E	I	S	N	Y	Y	L	W	
B*1508	-	-	-	-	-	-	-	-	-	-	N	-	F	-	-	-	-	-	PA
B*1513	-	-	-	-	-	-	-	-	-	-	N	-	-	-	-	-	-	-	ILQVP
B*1502	-	-	-	-	-	-	-	-	-	-	N	-	-	-	-	-	-	-	LVQP
B*1501	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	QMLV
B*1512	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	QLM
B*1503	-	-	S	-	-	-	-	E	-	-	-	-	-	-	-	-	-	-	QKM
B*1518	-	-	S	-	-	-	-	E	-	N	-	C	-	-	-	-	-	-	H
B*1509	-	-	S	-	-	-	-	E	-	N	-	C	-	-	-	-	-	-	H
B*1510	-	-	S	-	-	-	-	E	-	N	-	C	-	-	-	-	-	-	H
B*1517	-	-	-	-	-	-	-	-	-	-	-	N	M	S	-	-	-	-	TS
B*1516	-	-	-	-	-	-	-	-	-	-	-	N	M	S	-	-	-	-	T
B*4601	-	-	-	-	-	-	-	-	-	-	-	K	Y	Q	-	-	-	-	MT

Table 6

Figure 1. The structure of the proposed model. The input is a 2D image of a handwritten digit. The input is processed by a convolutional layer, followed by a max pooling layer, and then a fully connected layer. The output is a 1D vector representing the digit class.

ALLELE	P9 MOTIF	(dominant/strong)
B*1502	N T Y E S N L Y L Q R D S Y I I T K W	YFM
B*1501	- - - - - I - - - - -	YF
B*1503	- - - - - - - - - - -	YF
B*1508	- - - - - - - - - - -	YF
B*1512	- - - - - - - - - - -	YF
B*1518	- - - - - - - - - - -	YF
B*4601	Q - D V - - - - -	YF
B*1517	S - - - N I A - H D - - - - -	YF
B*1516	S - - - N I A - W - - - - -	YF
B*1509	- - - - - - - - - N Y - - - - -	Y
B*1510	- - - - - - - - - Y - - - - -	L F
B*1513	- - - - - N I A - I - - - -	L F W

TABLE 7

fraction	ion for MS/MS	derived peptide sequence
9	490.3 (+2)	A G G Z P A T P P A X
9	513.1 (+2)	S H Z G C V Z P A V
10	433.8 (+2)	G H D P D S P A A
10	455.4 (+2)	E H V A S S P A L
10	482.6 (+2)	M C Z - G M P A X
10	482.8 (+2)	G H G A N N D P A X
10	495.7 (+2)	X H S Z P A G P A X
11	448.9 (+2)	M H A D N P V X
11	482.8 (+2)	G H C E R N P A X
11	495.7 (+2)	X H S G A P Z A P X
11	516.7 (+2)	X H D T E H A P X
12	448.4 (+2)	T Q A P G N P V L
12	460.3 (+2)	T Z A G C M V P X
13	464.8 (+2)	M V - - H P V X
14	456.7 (+2)	A H S V P S P A F
14	477.7 (+2)	M H T - - P A P V
14	482.8 (+2)	P G A A V V P S X
15	510.1 (+2)	I H T P E N P V I
16	456.7 (+2)	S H D G S V P T X
16	522.7 (+2)	- - - - - P V X
16	523.3 (+2)	M A H S - - P V F
17	523.2 (+2)	- H - - - - - P V F
18	474.8 (+2)	M X G X S F P A X
18	491.2 (+2)	V H T C V N P V X
18	515.8 (+2)	E W H Y P V S X
19	496.6 (+2)	E T P E H A P V X

TABLE 8

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 Atty: Douglas J. Sorocco Tel: (405) 478-5344
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side chain	P1	P2	P3	P4	C ⁻³	C ⁻²	C ⁻¹	C-term	side chain
G	-	-	11.90%	10.32%	11.90%	-	-	-	G
P	-	10.32%	-	-	-	-	-	-	P
C	-	-	-	-	-	-	-	-	C
A	18.25%	11.11%	11.90%	-	-	-	10.32%	-	A
V	11.90%	-	-	-	-	10.32%	-	-	V
F	-	-	-	-	-	-	-	26.19%	F
M	-	-	-	-	-	-	-	-	M
I/L	13.49%	13.49%	-	-	-	-	-	-	I/L
S	-	-	-	-	-	-	-	-	S
T	-	-	-	-	-	13.49%	-	-	T
Y	-	-	-	-	-	-	-	63.49%	Y
N	-	-	-	-	-	-	-	-	N
W	-	-	-	-	-	-	-	-	W
Q/K	-	24.60%	-	-	-	-	15.87%	-	Q/K
H	-	-	-	-	-	-	-	-	H
R	-	-	-	-	-	-	-	-	R
D	-	-	-	-	-	-	-	-	D
E	-	-	-	-	-	-	10.32%	-	E
N value	13.64	19.52	3.80	0.32	1.90	3.81	6.51	69.68	C value
Nsum	37.28				81.90				Csum
B*1501 Nsum/Csum = 0.46									

TABLE 9

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side chain	P1	P2	P3	P4	C ⁻³	C ⁻²	C ⁻¹	C-term	side chain
G	12.16%	-	12.16%	13.51%	12.16%	-	-	-	G
P	-	10.81%	-	12.16%	10.81%	-	-	-	P
C	-	-	-	-	-	-	-	-	C
A	31.08%	-	-	-	-	-	-	-	A
V	-	-	-	-	-	-	-	-	V
F	-	-	-	-	-	-	-	20.27%	F
M	-	-	-	-	-	-	-	-	M
I/L	-	-	-	-	-	13.51%	-	-	I/L
S	-	-	-	-	-	10.81%	-	-	S
T	-	-	-	-	-	13.51%	17.57%	-	T
Y	-	-	-	-	-	-	-	68.92%	Y
N	-	-	-	-	-	-	-	-	N
W	-	-	-	-	-	-	-	-	W
Q/K	-	43.24%	-	-	13.51%	12.16%	14.86%	-	Q/K
H	-	-	-	-	-	-	-	-	H
R	-	-	-	-	-	-	-	-	R
D	-	-	-	-	-	-	-	-	D
E	-	-	-	-	-	-	-	-	E
N value	23.24	34.05	2.16	5.67	6.48	9.99	12.43	69.19	C value
Nsum	65.12				98.09				Csum
B*1503 N _{sum} /C _{sum} = 0.66									

TABLE 10

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side chain	P1	P2	P3	P4	C ³	C ²	C ¹	C-term	side chain
G	-	-	-	-	10.42%	-	-	-	G
P	-	27.08%	-	-	-	-	-	-	P
C	-	-	-	-	-	-	-	-	C
A	-	16.67%	13.54%	-	-	-	14.58%	-	A
V	-	-	-	-	-	11.46%	12.50%	-	V
F	-	-	-	-	-	-	-	23.96%	F
M	-	-	-	-	-	-	-	-	M
I/L	11.46%	-	-	-	-	-	-	-	I/L
S	-	-	-	-	-	11.46%	11.46%	-	S
T	10.42%	-	-	-	-	-	17.71%	-	T
Y	11.46%	-	-	-	-	-	-	66.67%	Y
N	-	-	-	-	-	-	-	-	N
W	-	-	-	-	-	-	-	-	W
Q/K	-	-	-	-	12.50%	-	-	-	Q/K
H	-	-	-	-	-	-	-	-	H
R	-	-	-	-	-	-	-	-	R
D	-	-	-	-	-	-	-	-	D
E	-	-	-	-	-	-	10.42%	-	E
N value	3.34	23.75	3.54	0.00	2.92	2.92	16.67	70.63	C value
Nsum	30.63				93.14				Csum

B*1508 Nsum/Csum = 0.33

TABLE 11

Serial No. 10/022,066
 Title: METHOD AND APPARATUS FOR THE PRODUCTION OF
 SOLUBLE MHC ANTIGENS AND USES THEREOF
 Applicant: William Hildebrand, et al. Group No.: 1652
 Filed: 12/18/2001 Examiner: Not Yet Assigned
 Atty: Douglas J. Sorocco Tel: (405) 478-5344
 Dkt. No. 6680.033

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side chain	P1	P2	P3	P4	C ¹	C ²	C ³	C-term	side chain
G	10.57%	-	10.57%	10.57%	-	-	11.38%	-	G
P	-	-	-	12.20%	-	28.46%	-	-	P
C	-	-	-	-	-	-	-	-	C
A	-	-	19.51%	-	-	-	-	14.63%	A
V	-	-	-	-	-	-	-	22.76%	V
F	-	-	-	-	-	-	-	-	F
M	11.38%	-	-	-	-	-	-	-	M
I/L	12.20%	-	-	-	-	-	-	12.20%	I/L
S	11.38%	-	-	-	-	-	-	15.45%	S
T	-	-	-	-	-	-	-	-	T
Y	-	-	-	-	-	-	-	-	Y
N	-	-	-	-	-	-	-	-	N
W	-	-	-	-	-	-	-	-	W
Q/K	-	-	-	-	-	-	-	-	Q/K
H	-	58.54%	-	-	-	-	-	-	H
R	-	-	-	-	-	-	-	-	R
D	-	-	-	-	-	-	-	-	D
E	-	-	-	-	-	-	-	-	E
N value	5.53	48.54	10.08	2.77	1.38	18.46	25.04	61.3	C value
Nsum	66.92				106.18				Csum

B*1510 Nsum/Csum = 0.63

TABLE 12

Serial No. 10/022,066
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side chain	P1	P2	P3	P4	C-1	C-2	C-3	C-term	side chain
G	-	-	-	-	-	-	-	-	G
P	-	-	-	13.33%	-	-	-	-	P
C	-	-	-	-	-	-	-	-	C
A	-	16.67%	-	13.33%	-	-	-	-	A
V	-	-	-	-	-	-	-	16.67%	V
F	-	-	16.67%	-	-	-	-	-	F
M	-	13.33%	-	-	-	-	-	16.67%	M
I/L	-	13.33%	13.33%	16.67%	-	-	-	-	I/L
S	-	-	-	-	-	13.33%	-	-	S
T	-	-	-	-	-	13.33%	-	-	T
Y	13.33%	-	-	-	-	-	-	80.00%	Y
N	-	-	-	-	-	-	-	-	N
W	-	-	-	-	-	-	-	-	W
Q/K	-	16.67%	13.33%	-	-	-	-	-	Q/K
H	23.33%	-	-	-	20.00%	13.33%	-	-	H
R	-	-	-	-	-	-	-	-	R
D	-	-	-	-	-	-	-	-	D
E	-	-	-	13.33%	-	-	-	-	E
N value	16.66	20.00	13.33	16.66	6.67	16.66	16.67	76.67	C value
N _{sum}	66.65				116.67				C _{sum}

B*1512 Nsum/Csum = 0.57

TABLE 13

fraction	ion for MS/MS	derived peptide sequence	alleles overlapping
6	398.2 (+3)	- - W D R H T X F	B*1501/B*1508
6	448.2 (+2)	- - - - - Y T	B*1501/B*1508
7	418.7 (+2)	A Q F A S G A G Z	B*1501/B*1503
8	402.2 (+2)	- G - - C D Y	B*1501/B*1503
8	418.7 (+2)	G S H F G V A Y	B*1501/B*1508
8	516.7 (+2)	N Q Z H G S A E Y	B*1501/B*1503/B*1508/B*1512
8	642.7 (+2)	P M N D W X M T Z T Y	B*1501/B*1512
9	331.4 (+3)	A P M A R G Z Y	B*1501/B*1503
9	418.7 (+2)	F V S N H A Y	B*1501/B*1508
9	433.2 (+2)	N P P A Z Z P N	B*1501/B*1503
9	437.0 (+2)	T G - - - - A Y	B*1501/B*1508
9	441.2 (+2)	- Q - D P P P D M Z Y	B*1501/B*1503
9	446.6 (+2)	G Q Z Z A V D F	B*1501/B*1503
9/10	465.2 (+2)	S Q F G G G S Q Y	B*1501/B*1503/B*1508/B*1512
9	476.2 (+2)	S Q F D H V T Y	B*1501/B*1508
9	578.0 (+2)	T P X G E P Y Z S Y	B*1501/B*1503/B*1508
10	398.3 (+2)	X A N - - V T	B*1501/B*1508
10	456.8 (+2)	C P L S C F T	B*1501/B*1503/B*1508
10	509.0 (+2)	F L Z A M Z S T Y	B*1501/B*1508/B*1512
10	532.0 (+2)	T V X D S Z T H Y	B*1501/B*1508/B*1512
13	503.6 (+2)	G Q R K G A G S V F	B*1501/B*1508
14	460.7 (+2)	V V A P I T T G Y	B*1501/B*1508
14	475.1 (+2)	V V A C V - - - Y	B*1501/B*1508
14	525.3 (+2)	P L A - N - H T Y	B*1501/B*1508
15	514.2 (+2)	F Q A R X T E Y	B*1501/B*1508
16	522.0 (+2)	V G Y V D D T Q F	B*1501/B*1508
17	351.3 (+3)	A A F C G - - - X V	B*1501/B*1508
17	408.7 (+2)	Y L H - - E T	B*1501/B*1508
17/18	451.4 (+2)	I L G P P G S V Y	B*1501/B*1508/B*1512
17	462.4 (+2)	X L G D V N M Y	B*1501/B*1508
17	507.0 (+2)	- - - - X V E F	B*1501/B*1508
17	519.2 (+2)	T A R V X S V E Y	B*1501/B*1508
18	565.7 (+2)	A E F W A C Z X Y	B*1501/B*1503
18/19	566.2 (+2)	Y M I D P S G V S Y	B*1501/B*1508/B*1512
19/20	560.0 (+2)	X V E X T T D Y Y	B*1501/B*1512
20/21	448.2 (+2)	A A G X G P T F Y	B*1501/B*1512
20/21	614.0 (+2)	I A V G Y V D D T Q F	B*1501/B*1512
21/22	507.2 (+2)	V A F V X F V G Y	B*1501/B*1512
21/22	557.2 (+2)	Y N R W S X E F	B*1501/B*1512
22/23	510.8 (+2)	A L M P - - X N Y	B*1501/B*1512

TABLE 14

Serial No. 10/022,066
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 Dkt. No. 6680.033

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allele	ion overlaps collided	positive overlaps	overlap frequency
B*1512	20	14	70%
B*1508	286	25	9%
B*1503	88	12	14%
B*1510	26	0	0%

TABLE 15

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motif P2/P9		+ length variation only		+ P2 variation only	
DLASMLNRY	(64-72)	MQLLCVF	(1-7)	DIEGHASHY	(28-36)
MLNRYKLIY	(68-76)	HLDIEGHASHY	(26-36)	SAPLEKQLF	(123-131)
PLEKQLFY	(125-133)	MLSAPLEKQLF	(121-131)	APLEKQLFY	(124-132)
YQLRCHLSY	(149-157)	PLEKQLF	(125-131)	LPNTRPHSY	(138-146)
ALSINGDKF	(159-167)	PLEKQLFY	(125-132)	NTRPHSYVF	(140-148)
DLPDLRGP	(203-211)	TMLPNTRPHSY	(136-146)	SINGDKFQY	(161-169)
FVPNLKDMF	(242-250)	MLPNTRPHSY	(137-146)	YTGAMTSKF	(169-177)
AVTMTAASY	(253-261)	QLRCHLSY	(150-157)	TSKFLMGTY	(174-182)
TMFEVSVAF	(290-298)	YVALSINGDKF	(157-167)	L TSAQSGDY	(216-224)
DLRWLAKSF	(314-322)	FQYTGAMTSKF	(167-177)	YSLVIVTTF	(224-232)
HLTTEKQY	(366-374)	AMTSKFLMGTY	(172-182)	VIVTTFVHY	(227-235)
ALRLATVGY	(375-383)	HVLSLVF	(192-198)	TTFVHYANF	(238-246)
ALGTESGLF	(467-475)	SL TSAQSGDY	(215-224)	MTAASYARY	(256-264)
AVSNAVDGF	(505-513)	SLVIVTTF	(225-232)	DTETLTMTF	(284-292)
ALYEASTTY	(564-572)	LVIVTTF	(226-232)	ATVKGMQSY	(338-346)
RQIPKIQNF	(597-605)	IVTTFVHY	(228-235)	ATSVLLSAY	(396-404)
ILSSNYFDF	(643-651)	IVTTFVHYANF	(228-238)	SAYNRHPLF	(402-410)
TVMEIAGLY	(666-674)	FVHYANFHN	(232-241)	HTVMRETLE	(414-422)
HVVLAIIY	(679-687)	FVHYANFHNFY	(232-242)	ESGLFSPCY	(471-479)
VVLAIILYF	(680-688)	TMTAASY	(255-261)	SPCYLSLRF	(476-484)
FLVHKIVMF	(696-704)	TMTAASYARY	(255-264)	IIPLINVTF	(544-552)
LVHKIVMFF	(697-705)	ELDTETLTMTF	(282-292)	TYLSSSLF	(570-578)
		TMFEVSVAFF	(290-399)	NSILSSNYF	(641-649)
		TVLKDIIGICY	(326-326)	AIILYFIAF	(683-691)
		VLKDIIGICY	(327-326)	FIAFALGIF	(688-696)
		TVKGMQSY	(339-346)		
		RLATVGY	(377-383)		
		TVGYPKAGVY	(380-389)		
		LLSAYNRHPLF	(400-410)		
		PLHTVMRETLE	(412-422)		
		VMRETLE	(416-422)		
		GLALGTESGLF	(465-475)		
		GLFSPCY	(473-479)		
		LMIIPLINVTF	(542-552)		
		PLINVTF	(546-552)		
		EVRSALY	(559-566)		
		YLSSSLF	(572-578)		
		TQKSCIF	(608-614)		
		TQKSCIFCGF	(608-617)		
		GLETTY	(627-633)		
		VQNSILSSNY	(639-648)		
		VQNSILSSNYF	(639-649)		
		ILSSNYF	(643-649)		
		VMEIAGLY	(667-674)		
		VVLAIILY	(680-687)		
		VVLAIILYF	(680-688)		
		VLAIIY	(681-687)		
		VLAIILYF	(681-688)		
		VLAIILYFIAF	(681-691)		
		ILYFIAF	(685-691)		
		FLVHKIVMFF	(696-705)		

TABLE 16

Serial No. 10/022,066
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Primer name	Sequence 5'-3'	Locus	Cut site	Annealing site
PP5UTA	GCGCTCTAGACCCAGACGCCGAGGATGGCC	A	XbaI	5UT
3PII4A	GCCCTGACCCCTGCTAAAGGT	A		Intron 4
PP5UTB	GCGCTCTAGACCCAGCCGACTCAGAATCTCCT	B	XbaI	5UT
3PII4B	TGCTTTCCCTGAGAAGAGAT	B		Intron 4
5UTB39	AGCGGAATTCCAGAGTCTCCTCAGACGCG	B*39	EcoRI	5UT B39
5PKCE	GGCGGAATTCCCGCCGCCACCATGCGGTCTATGGCGCC	C	EcoRI	5UT
3PII4C	TTCGTCTTCCCTGAGAAGAC	C		Intron 4
PP5UT	GGCGGAATTCCGGACTCAGAATCTCCCCAGACGCCGAG	B	EcoRI	5UT
PP3PEI	CCGCGAATTCTCATCTCAGGGTGAGGGGCT	A,B,C	EcoRI	Exon 4
PP3PEIH	CCGCAAGCTTTTCATCTCAGGGTGAGGGGCT	A,B,C	HindIII	Exon 4
3PEIHC7	CCGCAAGCTTTCAGCTCAGGGTGAGGGGCT	Cw*07	HindIII	Exon 4

TABLE 17

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Primer Name	Sequence 5'-3'
T7Prom	TAATACGACTCACTATAGGG
BGHrev	TAGAAGGCACAGTCGAGG
PPI2E2R	GTCGTGACCTGGGCCCC
PPI2E2F	TTTCATTTTCAGTTTAGGCCA
ABC13E4F	GGTGTCCCTGTCCATTCTCA

5'CY5 Sequencing Primers

TABLE 18

Serial No. 10/022,066
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Sample	OD 260nm	OD 280nm	260nm/280nm	Dilution factor	Concentration ug/ml
3A394	0.0346	0.0202	1.7111	20	34.5821

TABLE 19

Sample	OD 260nm	OD 280nm	260nm/280nm	Dilution factor	Concentration ug/ml
3A394TPC 1	0.2821	0.1505	1.8739	20	282.0960

TABLE 20

Sample	OD 260nm	OD 280nm	260nm/280nm	Dilution factor	Concentration ug/ml
3A394TPC 1	0.6919	0.3625	1.9087	50	1729.8492

TABLE 21

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Sample	Decay time milliseconds	# live cells/ml	# dead cells/ml	Viability %
3A394TPC 1	19.8	1.12×10^6	1.65×10^5	87.16

TABLE 22

Sample	Optical Density 492nm	Dilution	Concentration of soluble HLA ng/ml
3A394TP C1 well 1	1.278 1.388 (over range)	1.0	247.270
3A394TP C1 well 2	1.227 1.274	1.0	229.855
3A394TP C1 well 3	1.021 1.042	1.0	154.403
3A394TP C1 well 4	1.108 1.070	1.0	169.001

TABLE 23

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Allele	Allele Allele AlleleConcentration by ELISA ug/ml	Concentration by ELISA ug/ml Concentration by ELISA ug/ml Concentration by ELISA ug/ml Total amount made mg
Total amount made mg Total amount made mg Total amount made mg Total amount made mg HLA-A*0301	545.4	3.47
HLA-A*1102	888.5	2.57
HLA-A*2902	476.8	2.58
HLA-A*3002	50.3	3.38
HLA-A*3201	1382.0	9.61
HLA-A*3301	40.0	0.8
HLA-B*0801	66.0	21.0
HLA-B*1302	55.0	9.0
HLA-B*1401	146.0	50.0
HLA-B*1801	587.6	0.4
HLA-B*3701	1831.0	119.0
HLA-B*3801	128.0	66.0
HLA-B*3905	1400.0	120.0
HLA-B*40012	59.0	10.0
HLA-B*4002	400.0	180.0
HLA-B*4101	288.4	8.8
HLA-B*4402	59.0	10.0

TABLE 24

fraction	ion for MS/MS	derived peptide sequence
6	398.2 (+3)	- - W D R H T X F
6	448.2 (+2)	- - - - - Y T
7	382.7 (+2)	V Q F E A A T
7	418.7 (+2)	A Q F A S G A G Z
7	455.2 (+2)	A L G A - - R G Y
7	489.1 (+2)	- - V - - G H X Y
7	506.8 (+2)	X S - - - C E Y
8	402.2 (+2)	- G - - C D Y
8	419.2 (+2)	G S H F G V A Y
8	433.8 (+2)	A P P P P P P P P
8	455.2 (+2)	- - - Z A R G Y
8	462.2 (+2)	D P H A P P Z Y
8	507.2 (+2)	A V P S X H X X Y
8	512.3 (+2)	X A Z V Z M T A Y
8	512.8 (+2)	A L N G R V T M Y
8	516.9 (+2)	N Q Z H G S A E Y
8	522.9 (+2)	F G X A C X A T S Y
8	642.7 (+2)	P M N D W X M T Z T Y
9	331.4 (+3)	A P M A R G Z Y
9	418.7 (+2)	F V S N H A Y
9	426.2 (+3)	- - - - - - - - S Y
9	433.3 (+2)	N P P A Z Z P N
9	437.0 (+2)	T G - - - - A Y
9	441.2 (+3)	- Q - D P P P D M Z Y
9	446.6 (+2)	G Q Z Z A V D F
9	453.6 (+2)	X Q - - A G G Z Y
9	465.2 (+2)	S Q F G G G S Q Y
9	476.2 (+2)	S Q F D H V T Y
9	481.0 (+2)	G Q H A S V X S Y
9	514.2 (+2)	- - A A H V P P G Y
9	550.2 (+2)	F M D V G A P T V Y
9	578.0 (+2)	T P X G E P Y Z S Y
10	398.3 (+2)	X A N - - V T
10	448.2 (+2)	A Q A A P F A G Y
10	448.4 (+2)	V V V F G V Z F
10	450.4 (+2)	A Q M - - S E Y
10	456.8 (+2)	C P L S C F T
10	464.7 (+2)	- - - - F G H Y
10	473.7 (+2)	A L W - - P Z F
10	486.4 (+2)	V P H Z N A Y
10	498.7 (+2)	- - - - - G H G G Y
10	509.0 (+2)	F L Z A M Z S T Y
10	527.7 (+2)	G Q Y V V Z P T Y
10	532.0 (+2)	T V X D S Z T H Y
10	540.2 (+2)	P M F D P P Z T F
11	469.2 (+2)	A Q A E S L R Y
11	480.6 (+2)	X A V G H S G G T Y
11	511.2 (+2)	- - - - - P T Y
11	516.7 (+2)	E S X P N N V P Y
12	383.0 (+3)	L A H T E C P R G Y
12	435.0 (+2)	- - - - - P S Y
12	473.2 (+2)	V Q G P V G V Q Y

TABLE A

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12	475.0 (+2)	R G X G V A G T A F
12	505.0 (+2)	T G A P V S E E G Y
12	513.7 (+2)	V Q X Y Y G S V V
12	519.0 (+2)	E P A M V X Z C F
12	531.2 (+2)	G Q P G A P X G G Z Y
12	541.0 (+2)	G P P H N G X R A Y
12	542.2 (+2)	A A H W H V E A Y
12	553.7 (+2)	T P P T R R E S Y
12	577.2 (+2)	F P T D R R S Q F
13	363.0 (+3)	Y T G V S Y X H F
13	447.0 (+2)	A Q A S A P D A Y
13	465.0 (+2)	V Q Y Y X P F
13	503.6 (+2)	G Q R K G A G S V F
13	553.2 (+2)	X Q Z X - - D V Y
13	590.8 (+2)	A T G T A Z N X N Z Y
14	460.7 (+2)	V V A P I T T G Y
14	471.5 (+2)	V V A C V - - Y
14	495.2 (+2)	X Q Y T V G Y F
14	525.3 (+2)	P L A - N - H T Y
14	541.3 (+2)	P L F G Q T A G Q Y
14	550.4 (+2)	A - - - - Q X E Y
14	577.2 (+2)	Z G Y G N P X N G A Y
15	459.8 (+2)	V Q G P V G T D F
15	470.9 (+2)	V A G G W - - - F
15	514.2 (+2)	F Q A R X T E Y
15	536.6 (+2)	X A G F F X X E Y
15	544.2 (+2)	X Q - - - - Z Y
15	564.2 (+2)	S G A X D R A Y Z F
16	467.1 (+2)	F Q - - - - T X
16	500.4 (+2)	T P - - - A Z A F
16	501.0 (+2)	V V A T Z N Z Z X
16	503.6 (+2)	Y M V T - - - F
16	517.4 (+2)	A L G S Z A X M P F
16	521.3 (+2)	A P A V - - - V G Y
16	522.0 (+2)	V G Y V D D T Q F
16	525.6 (+2)	- - - - - T G F
16	536.0 (+2)	P V P N V R X N Y
16	544.4 (+2)	- - - - - T X S X
16	557.6 (+2)	T L E G W M S Z Y
16	561.5 (+2)	Y M V C N A E E Y
16	596.7 (+2)	- - - - - X R D X Y
16	596.9 (+2)	S L X - - - - F
17	343.2 (+3)	A Q H P S A X R F
17	351.3 (+3)	A A F C G - - - X V
17	408.7 (+2)	Y L H - - E T
17	441.2 (+2)	- - - - - Z A Y
17	451.4 (+2)	I L G P P G S V Y
17	455.0 (+2)	G L G Z T S A E F
17	462.4 (+2)	X L G D V N M Y
17	483.8 (+2)	V M G X T N A N F
17	490.2 (+2)	N A X G R E S S F
17	497.2 (+2)	A M N P T N T V F
17	507.0 (+2)	- - - - X V E F
17	511.2 (+2)	X Q A P A X F V Y
17	519.2 (+2)	T A R V X S V E Y

TABLE A cont'd.

Serial No. 10/022,066
 Title: METHOD AND APPARATUS FOR THE PRODUCTION OF
 SOLUBLE MHC ANTIGENS AND USES THEREOF
 Applicant: William Hildebrand, et al. Group No.: 1652
 Filed: 12/18/2001 Examiner: Not Yet Assigned
 Atty: Douglas J. Sorocco Tel: (405) 478-5344
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17	526.8 (+2)	A L F - - - F T Y
17	542.8 (+2)	X Q X N A Y X S Y
17	563.2 (+2)	G L A R C <u>S</u> Z V E Y
18	503.8 (+2)	S Q X <u>A</u> <u>A</u> <u>G</u> V D V F
18	511.7 (+2)	P Q G Z M A - - Y
18	519.6 (+2)	- V F V S H T T F
18	538.8 (+2)	<u>H</u> X T G <u>N</u> E A T S F
18	565.7 (+2)	A E <u>F</u> <u>W</u> A C Z X Y
18	566.2 (+2)	Y M I D P S G V S Y
18	581.2 (+2)	X Q G H H E M F Y
20	448.2 (+2)	A A G X G P T F Y
20	560.0 (+2)	X V E X T T D Y Y
20	614.0 (+2)	I A V G Y V D D T Q F
21	507.2 (+2)	V A <u>F</u> <u>V</u> <u>X</u> F V G Y
22	510.8 (+2)	<u>A</u> <u>L</u> M P - - X N Y
22	557.2 (+2)	Y N <u>R</u> <u>W</u> S X E F
24	546.3 (+2)	- - Z D R N V T F
25	546.3 (+2)	V V T M - - - Z Y

* Dashes represent positions at which amino acids could not be unambiguously assigned through NanoES-MS/MS fragmentation patterns and/or Edman data obtained. Underlined residues designate tentative assignments.

TABLE A cont'd.

Serial No. 10/022,066
 Title: METHOD AND APPARATUS FOR THE PRODUCTION OF
 SOLUBLE MHC ANTIGENS AND USES THEREOF
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 Dkt. No. 6680.033

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fraction	ion for MS/MS	derived peptide sequence
6	471.8 (+2)	A Z V E C E T Y
7	418.7 (+2)	A Q F A S G A G Z
7	504.2 (+2)	Z G X G G G P A T S Y
8	402.2 (+2)	- G - - C D Y
8	441.2 (+2)	- - - - Z S F
8	516.9 (+2)	N Q Z H G S A E Y
9	331.4 (+3)	A P M A R G Z Y
9	349.4 (+3)	- - - - - G F Y
9	418.7 (+2)	A Z V N S G - Y
9	426.2 (+3)	A A S S Z V - - P P Z Y
9	433.3 (+2)	N P P A Z Z P N
9	437.0 (+2)	A C G G C G Z D Y
9	441.2 (+3)	- Z - D P P P D M Z Y
9	446.6 (+2)	G Q Z Z A V D F
9	578.0 (+2)	T P X G E P Y Z S Y
10	426.5 (+2)	G P - - - P Z Y
10	443.2 (+2)	A P Z Y P P P P
10	448.3 (+2)	G Z V C T P G S F
10	456.8 (+2)	C P L S C F T
10	464.7 (+2)	S Q F G G G S Q Y
10	465.4 (+2)	A S G F N G S Z Y
10	503.8 (+2)	- Z - - Y T A Y
10	508.7 (+2)	G Z P P H N G F Y
10	517.0 (+2)	I K A D H V S T Y
10	527.7 (+2)	X Z A D H V X P Y
10	540.2 (+2)	- - - - P G Z V Y
10	549.2 (+2)	Z S V - - - Z T G Y
11	437.0 (+2)	H X G N Q A A Y
11	511.4 (+2)	Z A G T T V P V S Y
11	527.4 (+2)	G Q Y P T Q P T Y
11	581.4 (+2)	F A G S Z S N T S T Y
12	494.8 (+2)	S Z G G - - - T G Y
12	526.8 (+2)	Z G P P N Y X T Y
12	547.1 (+2)	V K V I Q Q E S Y
13	454.6 (+2)	L P P P P P P P
13	476.0 (+2)	A K Y S T P A T L
13	503.6 (+2)	G Q R K G A G S V F
13	513.1 (+2)	R Z S A N H E A X
13	526.4 (+2)	G K V R T D I T Y
13	553.2 (+2)	V V X P A V R S T Y
13	561.0 (+2)	A K Y P H V E D Y
13	571.3 (+2)	A Z N X S A Y V X Y
13	601.2 (+2)	E V V G D T Z Y
14	438.2 (+2)	A K A G I T T T L
14	490.8 (+2)	V - - T Z A G S A F
14	517.2 (+2)	A Z A A A N V X X Y
14	531.5 (+2)	A N H S V R D T Y
14	535.3 (+2)	E - - - G X R Z Y
14	552.8 (+2)	X Z H N D Z S T Y
14	577.2 (+2)	A N E Z X G - - - Y

TABLE B

Serial No. 10/022,066
 Title: METHOD AND APPARATUS FOR THE PRODUCTION OF
 SOLUBLE MHC ANTIGENS AND USES THEREOF
 Applicant: William Hildebrand, et al. Group No.: 1652
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15	497.3 (+2)	A A G P T A Z E S Y
15	514.2 (+2)	V A G X V F M Z Y
15	527.0 (+2)	A Z Y Z A Z V V F
15	564.2 (+2)	A Z F - - - Z X Y
15	577.2 (+2)	Z G Y G N P X N Z Y
15	626.0 (+2)	- - - - - Z A P C H Y
16	521.6 (+2)	A H A V Q R V V Y
16	525.6 (+2)	T Z X T V V X N Y
17	446.8 (+2)	A Z Z A S G X A F
17	492.8 (+2)	G S H S M R Y F
17	503.8 (+2)	Y G Y G A T V E F
17	967.6 (+1)	V Z - - - T T F
18	451.4 (+2)	Q P G P Q I V Y
18	455.2 (+2)	N G Z X S N N Y
18	475.2 (+2)	A N X V Z X E Y
18	489.1 (+2)	G Z - - - Z G X X Y
18	497.8 (+2)	A M N P T N T V F
18	525.2 (+2)	Y N - - - Z X F
18	538.8 (+2)	- M - - S Y Z N F
18	565.7 (+2)	A E <u>F</u> <u>W</u> A C Z X Y
19	521.6 (+2)	S Z <u>F</u> <u>G</u> <u>C</u> <u>P</u> T R F
19	524.6 (+2)	X G A X S N - - E F
19	571.2 (+2)	R Z A A Y R X T Y
19	646.2 (+2)	T N X H D G D G A T Z Y

* Dashes represent positions at which amino acids could not be unambiguously assigned through NanoES-MS/MS fragmentation patterns and/or Edman data obtained. Underlined residues designate tentative assignments.

TABLE B cont'd

Serial No. 10/022,066
Title: METHOD AND APPARATUS FOR THE PRODUCTION OF
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Atty: Douglas J. Sorocco Tel: (405) 478-5344
Dkt. No. 6680.033

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fraction	ion for MS/MS	derived peptide sequence
6	398.2 (+3)	- - W D R H T X F
6	448.2 (+2)	- - - - - Y T
8	419.2 (+2)	G S H F G V A Y
8	441.2 (+2)	V P <u>C</u> <u>G</u> <u>Z</u> <u>Z</u> S Y
8	473.2 (+2)	T A Z X H R G Y
8	512.8 (+2)	X A Z Y E H T Y
8	516.9 (+2)	N Q Z H G S A E Y
8	546.8 (+2)	N G <u>X</u> <u>A</u> <u>M</u> <u>H</u> W T Y
9	418.7 (+2)	F V S N H A Y
9	437.0 (+2)	T G - - - - A Y
9	465.2 (+2)	S Q F G G G S Q Y
9	476.2 (+2)	S Q F D H V T Y
9	481.0 (+2)	- P - - G Z D E V
9	514.2 (+2)	N G Y D G P N A G Y
9	578.0 (+2)	T P X G E P Y Z S Y
10	398.3 (+2)	X A N - - V T
10	448.3 (+2)	M P H S G Y G F
10	450.4 (+2)	V D X - - - Y
10	456.8 (+2)	C P L S C F T
10	464.7 (+2)	- - - - - P G F Y
10	486.2 (+2)	- A - P H P M G Y
10	494.2 (+2)	A Q T V G Y G E Y
10	508.7 (+2)	- - - - - S V Y
10	509.0 (+2)	F L Z A M Z S T Y
10	532.0 (+2)	T V X D S Z T H Y
11	444.1 (+2)	T P - - A R A P T
11	469.2 (+2)	S E H D R M Y
11	480.6 (+2)	T G N C S G T G T Y
11	496.8 (+2)	A Q V N P S X T Y
11	532.3 (+2)	S P G A E T R A X Y
12	473.2 (+2)	Y L G - - - G A F
12	494.8 (+2)	X T S <u>F</u> M Z V Y
12	499.0 (+2)	- P - - - P S S G Y
12	505.0 (+2)	T P - - - G R M Y
12	513.7 (+2)	P M F D Z Z V Y
12	519.0 (+2)	Y L - - - R T F
12	531.2 (+2)	A Q E H G C A A Z F
12	542.2 (+2)	- <u>M</u> - - - <u>G</u> <u>V</u> H D Y
12	550.2 (+2)	Y V S - - R N Q Y
12	553.7 (+2)	A Q Y A A G E S F Y
12	564.0 (+2)	<u>T</u> <u>P</u> H T Z H D E Y
12	565.2 (+2)	Y M - - - <u>F</u> M Y
13	396.1 (+3)	D P H Y V S G H Z F
13	401.2 (+2)	M V G X X P A T
13	526.4 (+2)	Z A S P G E X T S Y
14	460.7 (+2)	V V A P I T T G Y
14	471.5 (+2)	V V A C V - - - Y
14	525.3 (+2)	P L A - N - H T Y
14	543.2 (+2)	X A <u>X</u> <u>Y</u> <u>R</u> <u>R</u> M Y
14	550.4 (+2)	P L A <u>M</u> <u>Z</u> X Y T Y

TABLE C

Serial No. 10/022,066
 Title: METHOD AND APPARATUS FOR THE PRODUCTION OF
 SOLUBLE MHC ANTIGENS AND USES THEREOF
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 Atty: Douglas J. Sorocco Tel: (405) 478-5344
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15	460.6 (+2)	- P - M P G X A Y
15	461.0 (+2)	H T T S Z N A Y
15	506.0 (+2)	M A A M V G V A V Y
15	508.4 (+2)	G P Z V M Z H G Y
15	514.2 (+2)	F Q A R X T E Y
15	520.0 (+2)	L P H Q P L A T Y
15	525.2 (+2)	A A A X V - - - V T Y
15	536.6 (+2)	X P E M G Z F S Y
15	544.2 (+2)	Y V - - V R - V F
15	564.2 (+2)	F V T X N X E E Y
16	489.0 (+2)	A A P V G A X E S Y
16	500.4 (+2)	G S - - - S Y T Y
16	522.0 (+2)	V G Y V D D T Q F
16	525.7 (+2)	Y V A - - - P A F
16	533.0 (+2)	V G Y - - A H P G F
16	535.7 (+2)	Z A T N S V T S T Y
16	537.0 (+2)	- - - - - S T Y
16	545.8 (+2)	Y A T A G E M M A F
16	547.0 (+2)	S P T Y T H A V A F
16	557.0 (+2)	M P A - - M V M A F
17	351.3 (+3)	A A F C G - - - X V
17	393.7 (+2)	S P N E D X M Z V F
17	403.2 (+2)	V A A T A G A V F
17	408.7 (+2)	Y L H - - E T
17	414.8 (+2)	T A F P F V F
17	451.4 (+2)	I L G P P G S V Y
17	462.4 (+2)	X L G D V N M Y
17	476.2 (+2)	Y G - - - V X S M
17	490.8 (+2)	X P H C S C S S F
17	504.0 (+2)	D P <u>P</u> <u>C</u> <u>W</u> <u>G</u> V S F
17	507.0 (+2)	- - - - X V E F
17	511.2 (+2)	- - - - A H D A Y
17	519.2 (+2)	T A R V X S V E Y
17	526.8 (+2)	X S D G R Z X T Y
17	542.8 (+2)	N M N D L V S E Y
17	557.2 (+2)	M P A A <u>D</u> <u>Y</u> <u>E</u> V A F
18	474.8 (+2)	A E I L Q V I Y
18	503.8 (+2)	A P - - - X V S Y
18	514.7 (+2)	M P A G Y N N V Y
18	519.6 (+2)	Y M S G <u>X</u> <u>Y</u> <u>G</u> T F
18	526.8 (+2)	- - - <u>A</u> <u>V</u> <u>V</u> A Z S Y
18	538.8 (+2)	X P V V P A A Z T Y
18	566.2 (+2)	Y M I D P S G V S Y
18	616.3 (+2)	F A N G V <u>Z</u> <u>G</u> <u>C</u> <u>A</u> <u>F</u> A F

* Dashes represent positions at which amino acids could not be unambiguously assigned through NanoES-MS/MS fragmentation patterns and/or Edman data obtained. Underlined residues designate tentative assignments.

TABLE C cont'd.

Serial No. 10/022,066
 Title: METHOD AND APPARATUS FOR THE PRODUCTION OF SOLUBLE MHC ANTIGENS AND USES THEREOF
 Applicant: William Hildebrand, et al. Group No.: 1652
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 Atty: Douglas J. Sorocco Tel: (405) 478-5344
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fraction	ion for MS/MS	derived peptide sequence
6	493.0 (+2)	N H A V G - - V S M
6	557.8 (+2)	H N V F Z P T S N A
7	434.8 (+2)	S V C E T E S X
7	481.3 (+2)	T H P S Z A C A F
7	489.1 (+2)	- H - - S P X X
8	420.1 (+2)	A N X E G P H T
8	441.7 (+2)	G H S P P T S S L
8	494.8 (+2)	C H S A F A L
8	511.6 (+2)	H H A F A Z V X V
8	519.4 (+2)	D H Y Y X A G S X
9	411.4 (+2)	E X A P H A A X
9	424.3 (+2)	A A A X R C E X
9	426.1 (+2)	G H Z A P A A S X
9	441.7 (+2)	V H N P Z S S X
9	444.2 (+2)	A G G P T X C R X
9	455.5 (+2)	L H L L T L E A
9	490.3 (+2)	A G G Z P A T P P A X
9	513.1 (+2)	S H Z G C V Z P A V
9	520.0 (+2)	X H R L C S P T X
10	404.2 (+2)	S V S X P H A P
10	417.1 (+2)	A P F T G G N G X
10	433.8 (+2)	G H D P D S P A A
10	446.2 (+2)	E H G X E N G H
10	455.4 (+2)	E H V A S S P A L
10	460.4 (+2)	H H A P C G V S X
10	464.0 (+2)	N H A I V S T S V
10	464.7 (+2)	G H Z N S V T S V
10	465.3 (+2)	S H Z A P C T S V
10	469.4 (+2)	F V A R F V S X
10	469.6 (+2)	H H S D G S V S L
10	473.7 (+2)	S H A G A P P P T X
10	482.6 (+2)	M C Z - G M P A X
10	482.8 (+2)	G H G A N N D P A X
10	495.7 (+2)	X H S Z P A G P A X
10	508.3 (+2)	X H V V S - - V X
10	511.2 (+2)	A V X D C C Z V A V
10	522.3 (+2)	E X G G N T N P Z X
10	522.7 (+2)	Y H G S Z N P E X
10	569.6 (+2)	- - - - - T Y S Y
10	574.3 (+2)	- - - - - - - M
11	405.7 (+2)	S H - - - Y F
11	425.8 (+2)	A H P D Z A X V
11	444.7 (+2)	G T A H Y Z V X
11	448.9 (+2)	M H A D N P V X
11	455.7 (+2)	S H V D R P S X
11	459.7 (+2)	T G A A F Z N P X
11	482.8 (+2)	G H C P R N P A X
11	495.7 (+2)	X H S G A P Z A P X
11	516.7 (+2)	X H D T E H A P X
11	562.3 (+2)	- - - Y Z A Y V Y

TABLE D

Serial No. 10/022,066
 Title: METHOD AND APPARATUS FOR THE PRODUCTION OF
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12	411.7 (+2)	G H G P T X A A V
12	428.8 (+2)	V P - - - - -
12	444.7 (+2)	Y Q H T G A V L
12	448.4 (+2)	T Q A P G N P V L
12	460.3 (+2)	T Z A G <u>C</u> <u>M</u> <u>V</u> P X
12	490.9 (+2)	T H T Q P G V Q L
12	507.4 (+2)	G H A G H V P P E X
12	511.6 (+2)	T H F R Y V S X
12	528.1 (+2)	E H R P D R V F
13	427.6 (+2)	S H A Q T V V L
13	449.2 (+2)	S H A N S A V V L
13	464.8 (+2)	M V - - H P V X
13	487.6 (+2)	Y H H G G V S A F
13	506.2 (+2)	- H - - G H T G Y X
14	420.1 (+2)	N H A N G L T L
14	438.7 (+2)	- - - - - P X X
14	456.7 (+2)	A H S V P S P A F
14	477.7 (+2)	M H T - - P A P V
14	482.8 (+2)	P G A A V V P S X
14	560.8 (+2)	G H A G M G C V F Z X
14	592.3 (+2)	M R - - - - G X E X
15	418.9 (+2)	S H G V P R A X
15	439.0 (+2)	E H H M P X X
15	454.3 (+2)	H H Z C A A G A X
15	492.1 (+2)	X V D <u>Z</u> <u>A</u> <u>E</u> P X V
15	510.1 (+2)	I H T P E N P V I
15	520.0 (+2)	M G X P V R H M V
15	524.2 (+2)	S H Y D W Z V X
15	532.9 (+2)	M P H S H P F V X
15	577.2 (+2)	Z C V R C Z N G V F
16	412.9 (+2)	S H A G A G X V X
16	418.3 (+2)	G H X E G P X X
16	424.3 (+2)	X H G G D H V X
16	448.6 (+2)	E Z A H S X V X
16	448.9 (+2)	Y H H D X V X
16	454.3 (+2)	M A G A W C R X
16	456.7 (+2)	S H <u>D</u> <u>G</u> <u>S</u> V P T X
16	464.2 (+2)	F H - - X X X
16	469.9 (+2)	E H - - - T V X
16	472.3 (+2)	M A X - - - V V
16	499.0 (+2)	G H A <u>X</u> <u>T</u> D G X T X
16	504.1 (+2)	P V <u>S</u> <u>H</u> <u>X</u> V N E L
16	507.7 (+2)	X X Y <u>T</u> <u>P</u> <u>G</u> H T X
16	522.7 (+2)	- - - - - P V X
16	523.3 (+2)	M A H S - - P V F
16	529.9 (+2)	X H Y D R N Q X
16	536.2 (+2)	E A - - C Z V T T Y
16	547.9 (+2)	- - - - - A X S V
16	552.4 (+2)	X Z <u>A</u> <u>P</u> <u>T</u> S V F Z X
17	367.7 (+3)	<u>F</u> <u>T</u> <u>M</u> <u>P</u> A H P S T X
17	490.8 (+2)	M T X G Y G E P X
17	557.3 (+2)	A H G R K M S K S L
17	340.7 (+3)	- <u>H</u> - - H A Z V X
17	367.7 (+3)	- - - - - R X S H X
17	419.8 (+2)	- - - H A V G X X

TABLE D cont'd.

Serial No. 10/022,066
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17	462.8 (+2)	M S S N E X X M
17	476.2 (+2)	G H - - - P C C
17	504.2 (+2)	X H V X A V N E X
17	523.2 (+2)	- H - - - - P V F
17	543.2 (+2)	X H E V Z P H X X
17	590.2 (+2)	A T E H <u>C</u> <u>F</u> <u>V</u> M E X
18	456.4 (+2)	A H S N L A S V L
18	463.3 (+2)	V X A P A N D X X
18	474.8 (+2)	M X <u>G</u> <u>X</u> S F P A X
18	491.2 (+2)	V H T C V N P V X
18	497.8 (+2)	S H Q R Q L L L
18	515.8 (+2)	E W H <u>Y</u> P V S X
18	519.7 (+2)	<u>F</u> H M <u>D</u> X Z T F
18	543.4 (+2)	X H E <u>V</u> <u>Z</u> P H X X
18	596.8 (+2)	<u>F</u> <u>H</u> <u>H</u> <u>T</u> Z S N P X X
19	434.6 (+2)	- H <u>G</u> <u>C</u> <u>P</u> G M P X
19	496.6 (+2)	<u>E</u> <u>T</u> <u>P</u> <u>E</u> H A P V X
19	539.6 (+2)	<u>M</u> <u>X</u> P G N S A X Y X

* Dashes represent positions at which amino acids could not be unambiguously assigned through NanoES-MS/MS fragmentation patterns and/or Edman data obtained. Underlined residues designate tentative assignments.

TABLE D cont'd.

Serial No. 10/022,066
 Title: METHOD AND APPARATUS FOR THE PRODUCTION OF
 SOLUBLE MHC ANTIGENS AND USES THEREOF
 Applicant: William Hildebrand, et al. Group No.: 1652
 Filed: 12/18/2001 Examiner: Not Yet Assigned
 Atty: Douglas J. Sorocco Tel: (405) 478-5344
 Dkt. No. 6680.033

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fraction	ion for MS/MS	derived peptide sequence
7	504.1 (+2)	H M S G Z P T S Y
7	549.2 (+2)	H N Z A A H Z E Y
8	517.0 (+2)	N Q Z H G S A E Y
8	526.0 (+2)	H A A <u>X</u> <u>Y</u> <u>S</u> Z V Y
8	642.7 (+2)	P M N D W X M T Z T Y
10	465.3 (+2)	S Q F G G G S Q Y
10	484.3 (+2)	Y Q S <u>D</u> <u>H</u> R Y
10	509.0 (+2)	F L Z A M Z S T Y
10	532.0 (+2)	T V X D S Z T H Y
11	424.3 (+2)	H X S T Z D F
11	464.3 (+2)	H A P P T D P P P
11	550.0 (+2)	H G P A N <u>R</u> <u>D</u> <u>S</u> V F
11	563.3 (+2)	F P Y P T D P Z Y
12	531.2 (+2)	K N A N L V Q L Y
14	585.6 (+2)	R S F X X E N E Y
16	488.7 (+2)	H M Z N P T S Y
16	661.9 (+2)	Y V X F - - - V Y
17	577.6 (+2)	R S M X <u>R</u> <u>C</u> <u>P</u> E Y
18	451.1 (+2)	I L G P P G S V Y
18	523.0 (+2)	- - <u>F</u> <u>V</u> <u>T</u> A Z T Y
19	565.6 (+2)	Y M I D P S G V S Y
19	503.8 (+2)	S Q X A A G V D V F
20	560.0 (+2)	X V E X T T D Y Y
20	582.4 (+2)	M Y N <u>C</u> <u>N</u> E X D Y
21	448.2 (+2)	A A G X G P T F Y
21	614.0 (+2)	I A V G Y V D D T Q F
22	507.2 (+2)	V A <u>F</u> <u>V</u> <u>X</u> F V G Y
22	557.2 (+2)	Y N <u>R</u> <u>W</u> S X E F
23	510.8 (+2)	<u>A</u> <u>L</u> M P - - X N Y
25	562.8 (+2)	N Q F Q A L L Q Y

* Dashes represent positions at which amino acids could not be unambiguously assigned through NanoES-MS/MS fragmentation patterns and/or Edman data obtained. Underlined residues designate tentative assignments.

TABLE E